UNITED STATES

AIR FORCE ACADEMY

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The mission of the Air Force Academy is to provide instruction and experience to all cadets so that they graduate with the knowledge and character essential to leadership and the motivation to become career officers in the United States Air Force.

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To Interested Young Men and Women

The mission of the Air Force Academy is to prepare the future leaders of the Air Force. The Academy staff and faculty are dedicated to this mission through a "Commitment to Excellence"--a commitment they hope you will share if you become a cadet. Their job is to provide each cadet with the very best military training and education and to instill in each cadet a strong sense of duty and integrity. This well-balanced program of professional development provides our graduates with a solid foundation for their careers of service to our country in the United States Air Force.

We do our best to bring the finest young people here and, in turn, we expect them to perform to the best of their abilities in all phases of our challenging program. The rewards for this performance are graduation from an outstanding military institution with a bachelor of science degree, a commission in the Regular Air Force, and an opportunity to serve their country. Graduates are obligated to serve in the Air Force for a minimum of five years, but the majority elect the advantages of a lifetime of service as career officers.

The type of young person we seek is the outstanding high school student--the leader, the scholar, the athlete--who is interested in discipline, in service, and in pursuing a meaningful life. If you are this type of individual, I encourage you to prepare and apply for an appointment to the Air Force Academy. I remind you, however, that to succeed at the Academy requires your own personal motivation and dedication.

I suggest that you review the material in this catalog very thoroughly. Be sure you understand our requirements and your commitment to the Academy and the Air Force if you become a cadet. Understand that you will be attending a professional military school with the mission of motivating and training career Air Force officers. The professional military development aspects of the USAF Academy are its cornerstones. Far too many cadets come to this institution for the wrong reason, thinking they can "tolerate" the military environment. You don't go to medical school to be a lawyer, or enter an engineering program to be a minister. It then follows, you don't come to the USAF Academy feeling that you can "tolerate" the traditional military education system--you come because of this system.

From your Air Force Academy, I send my best wishes for your success.

Robert E. Kelley

ROBERT E. KELLEY, Major General, USAF
Superintendent

The covers are from original paintings created especially for this catalog by aviation artist, Richard R. Broome.
Front: An F-16, the "Fighting Falcon," in a performance climb over the academic area.
Back: The F-16 over Falcon Stadium.

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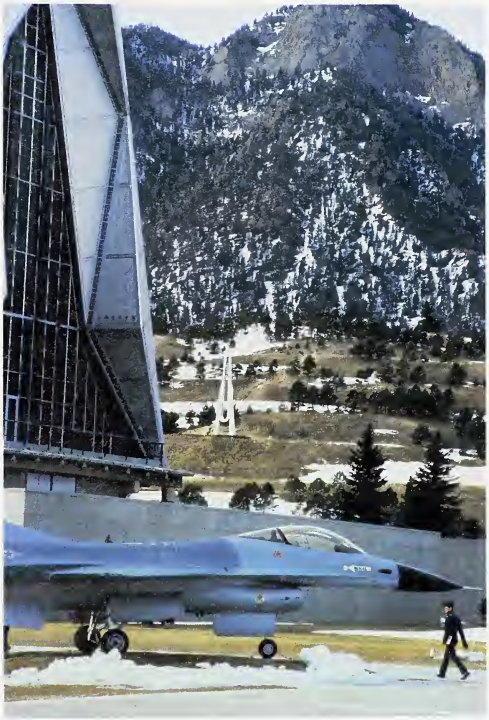

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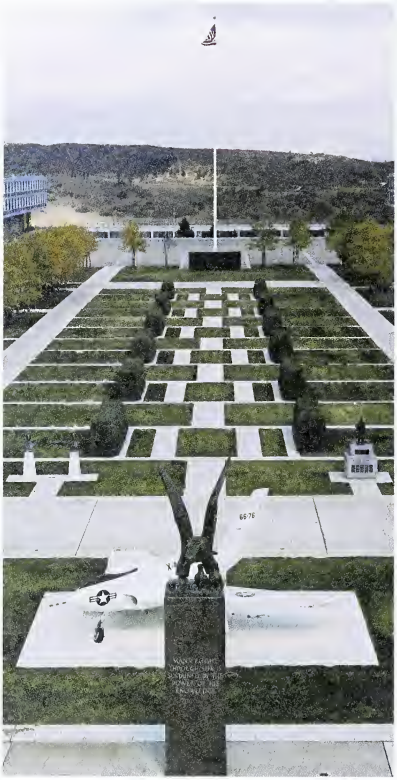

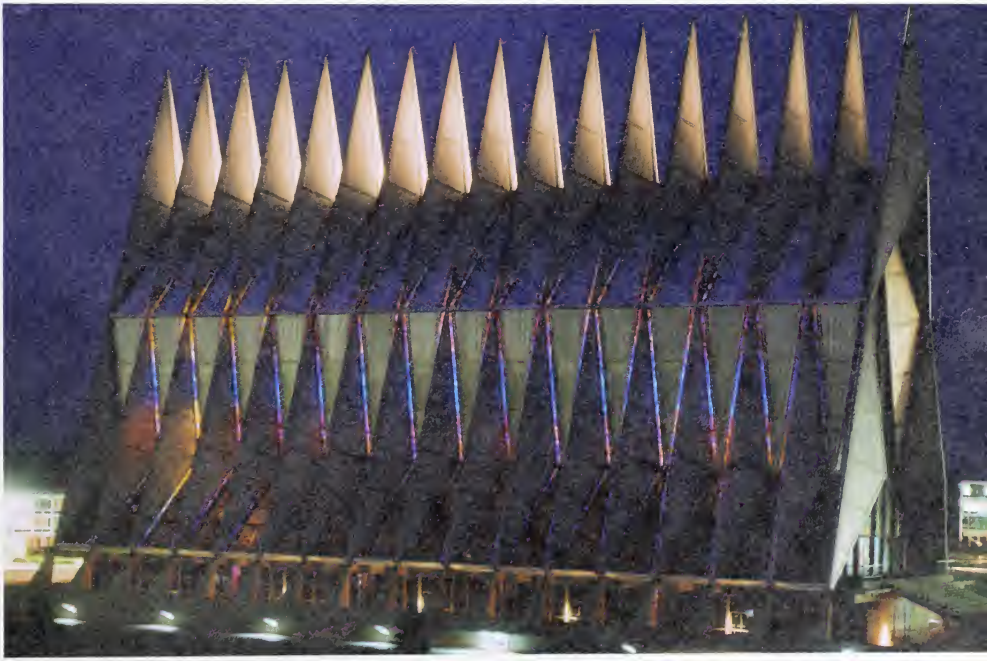

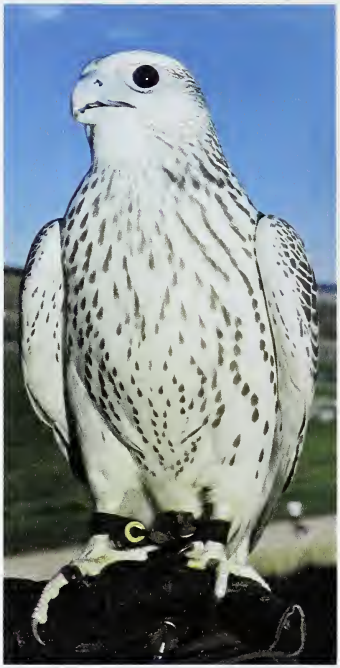

FALCONS

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The catalog should be used by high school students, counselors, and other interested persons who are seeking detailed information about the Air Force Academy, the curriculum and faculty.

Air Force Admissions Liaison Officers (LOs) will receive copies of the catalog. They should provide copies to high school counseling offices and to students in their area whose eligibility to compete for a cadet appointment has been determined through their precandidate questionnaire.

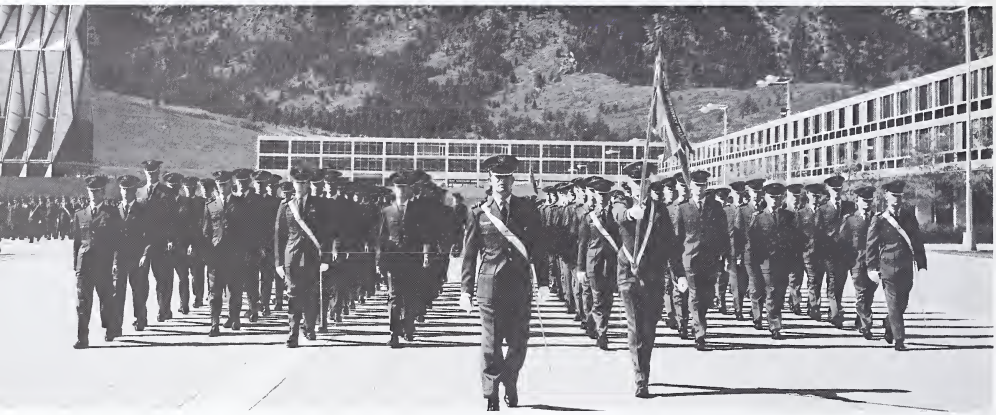
Microfiche copies of the catalog will be mailed to high school counseling offices and to libraries (public, government, college and university).

To obtain Academy literature appropriate to your needs, write to the Academy and state the information desired. If you are a student, include your age and grade in school.

Send your request to: Cadet Admissions Office/RRS, USAF Academy, Colorado Springs CO 80840.

PROFESSIONAL DEVELOPMENT

The Air Force Academy is a unique educational experience. It is important that you understand what this education is all about before you make the decision of whether or not the Academy is for you.



The nation today needs men who think in terms of service to their country and not in terms of their country's debt to them."
Gen Omar N. Bradley

Through reading this catalog you will learn what will be expected of you from the time you enter until you graduate four years later, and what life as an Air Force officer holds for Academy graduates. An Air Force Academy education **is not** for everyone; however, if it is for you, a careful examination of this catalog will prepare you for what's ahead.

The Academy's mission--to produce the leaders of tomorrow's Air Force, our country's defenders--is accomplished through the three aspects of its program-- military, academic, and athletic. These three aspects permeate the Air Force Academy's lifestyle. They are the foundation of the Academy's leadership development program. Together they provide each cadet with the knowledge, skills, values, and behavior characteristics essential to develop leadership growth.

Academics at the Air Force Academy start with general education courses which include a balanced offering in sciences, engineering, social sciences, and humanities. These courses are part of the core curriculum required of every cadet. They prepare you to understand the world in which we live and provide a background for your role as a future leader. General education requirements are covered in such courses as world history, basic psychology, literature, political science, economics, mathematics, physics, chemistry, biology and others.

Professional courses, which are also part of the core curriculum, concentrate on the training and education necessary for the career path to military leadership. These professional courses are not generally taught in the same format at other institutions of higher education. These courses include leadership, astronautics, law for commanders, military history, defense policy, light plane flying, and others. Some courses in the core curriculum are structured to meet both general education and professional aims. Examples of these courses are English, management, philosophy, foreign languages and engineering.

Specialized elective courses enable you to enhance your own interests in military, academic, and physical fitness activities.

You will be allowed to choose an academic major and complete the course requirements in that specialty. To gain more knowledge and experience, you are encouraged to take other electives beyond your major. Electives are offered in advanced academic courses, military studies, military training and physical fitness programs to include intercollegiate athletics. Electives also prepare you for the possibility of graduate education in the future.

In the concept of the total Academy experience, every organization at the Academy contributes to your professional development. The Academy Superintendent directs this effort, assisted by the Commandant of Cadets, the Dean of the Faculty, and the Director of Athletics. This chain of responsibility ties every Academy organization to the quality of our graduates and to their preparation for future leadership.

The entire program is based on challenges--mental, ethical, and physical. These challenges develop superior officers committed to duty, honor, and service to our country.

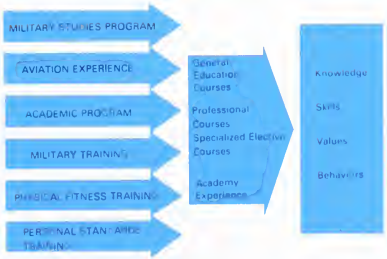
If you complete the program, you will graduate with a bachelor of science degree and a commission in the Regular Air Force. Following graduation, a majority of the new officers enter Air Force pilot or navigator training. The curriculum provides the background for flying, and professional development stimulates the motivation for that training.

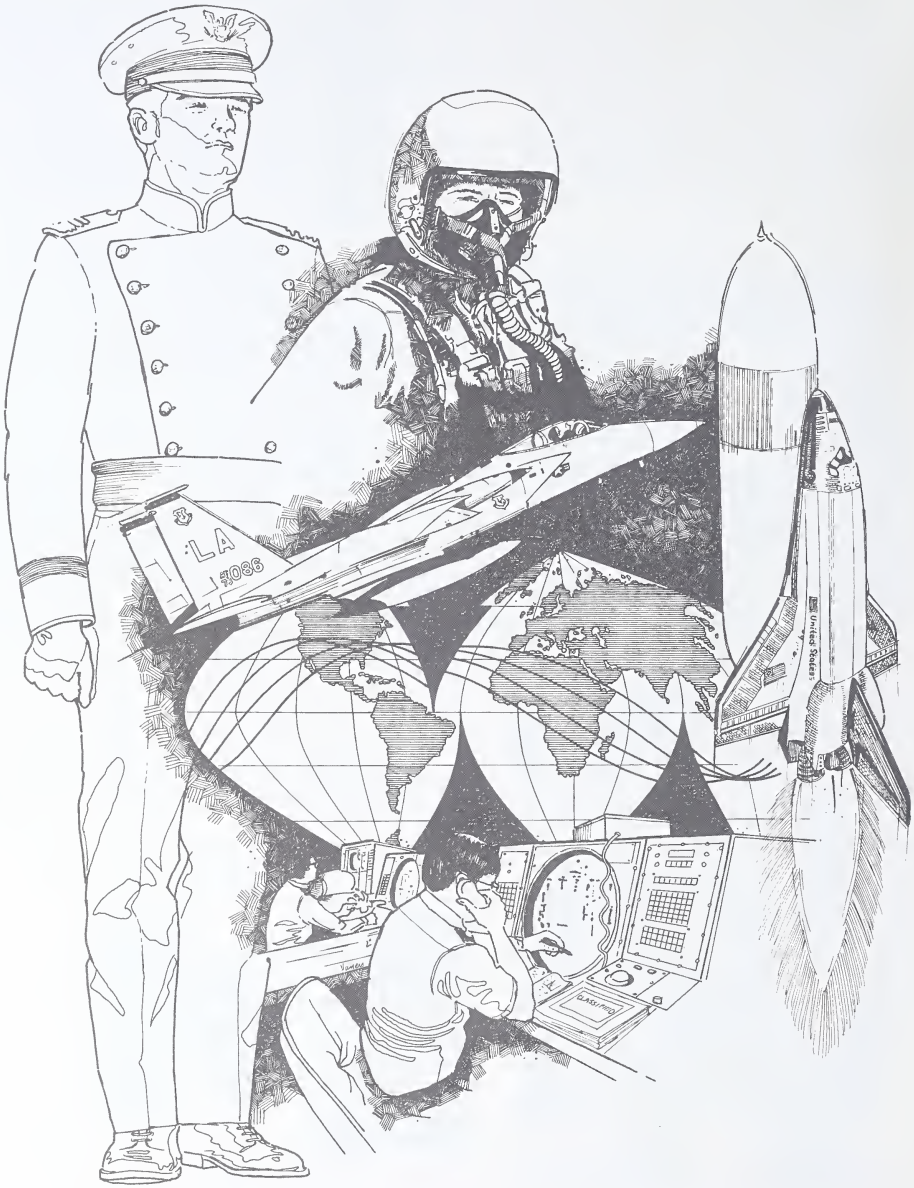
Faculty members and counselors will advise you concerning the core courses, academic majors, and specialized electives. They will assist you with your own professional development from admission to graduation.

The flow chart below illustrates the professional development programs and the means by which our objectives are achieved.

"The Academy experience is demanding. Expect constant challenges and pressures from professional development, academics, the upperclass, and from within yourself."

PROFESSIONAL DEVELOPMENT PROGRAM

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United Rockets

AIR FORCE CAREER

When you graduate from the Air Force Academy, you will receive a commission as a second lieutenant in the Regular component of the Air Force. Under the agreement which you signed upon entering the Academy, you will have an obligation to serve as an officer for five years. You are expected to enter flight training following graduation if offered the opportunity by the Air Force. This flight training lasts approximately one year, and you incur a longer service commitment following its completion. You must serve for five years following navigator training, six after pilot training. A majority of Academy graduates remain in the Air Force for 20 years or more.

An extensive information and counseling program is conducted to assist you in making a reasonable choice of your initial assignment and in formulating tentative long-range plans for your career. Outstanding officers from major Air Force organizations, representing the broad range of Air Force skills, meet with you to discuss professional opportunities, flying and technical training, graduate education and personal aspects of service life. The Cadet Career Information Office, your Air Officer Commanding, the Cadet Counseling Center, and other professional sources among the Academy faculty and staff provide individual counseling. These discussions are particularly emphasized during your second- and firstclass (junior and senior) years so you will have factual, current information concerning the Regular Air Force you will soon enter. You will receive additional counseling as a junior officer. Graduation from the Academy will lead you to rapidly expanding professional opportunities. The advancement of Air Force technology has created many alternatives for officers with technical degrees.

Flying Career Assignments

Most Air Force Academy graduates initially pursue flying assignments. Possessing an aeronautical rating will broaden your Air Force opportunities, as many important staff and command positions

"As an Air Force officer assigned to NASA, I believe I am helping my nation utilize the promise of the space frontier, and doing so in a way which will ensure our continued national security and national integrity."
Col Karol J. Bobko

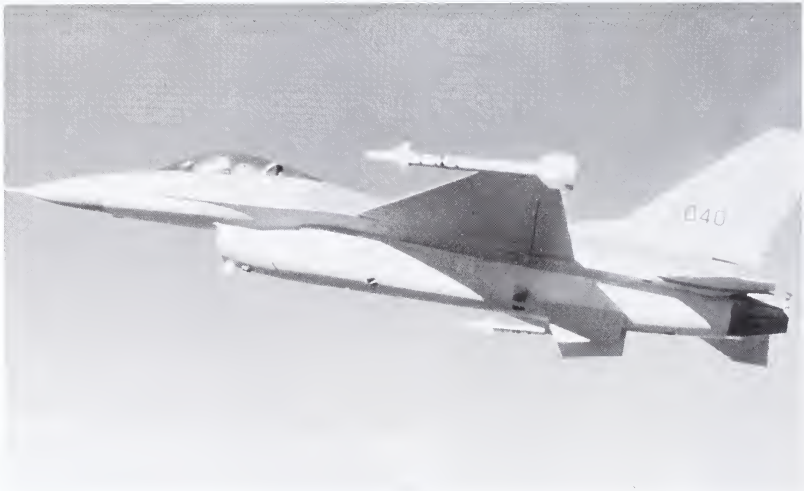
require a flying background. Medically qualified cadets may enter either pilot or navigator flying training following graduation. Pilot and navigator training are provided at Air Training Command bases. The Academy conducts both pilot and navigator indoctrination programs. These enable you to validate some of the basic courses in undergraduate flying training. After completing the undergraduate instruction and earning your wings, you will be scheduled for advanced training. Pilots and navigators may specialize in aircraft such as bombers, transports or fighters.

Following completion of flying training, you can expect to be assigned to a combat operational unit or mission support unit for several years. As Air Force requirements permit, you may then assume duties in other career areas. However, the primary mission of the Air Force is to fly, and you must anticipate that a significant portion of your Air Force career will be in duties related to flying.

these are the scientific, engineering, technical and combat support areas.

Authorized initial assignments for Academy graduates in each class will be subject to change annually, based on the needs of the Air Force. From among the areas designated for your graduating class, you will be allowed to select a position for which you are academically qualified. After completing an assignment of three to five years in that specialty, you may volunteer for duty in any Air Force career area. Air Force requirements for personnel in that field, as well as your individual qualifications, will be considered in reviewing your application for reassignment.

There are over 80 major career areas which include many non-flying Air Force Specialty Codes (AFSCs). These disciplines embrace the broad spectrum of the sciences and engineering, plus the fields of administration, management, finance, maintenance, supply, special investigations, cartography, human resources, health



"Nothing great was ever achieved without enthusiasm."
Ralph Waldo Emerson

Non-Flying Career Assignments

If you are not qualified to enter flying training, you will be assigned to one of several mission support career fields. For your initial assignment, you will be limited to important jobs in which Academy graduates are highly qualified to serve. Generally, services, information, education, audiovisual services, law, and medicine.

Legal and Medical Training

Up to two percent of each Academy graduating class may be sent directly to

medical school upon graduation. Training is completed under the Armed Forces Health Professions Scholarship Program or at the Uniformed Services University of the Health Sciences. These two programs are also available to all active duty officers. Selection for these programs is on a competitive basis and the number of students will be based on the needs of the Air Force.

There is currently no provision for direct entry into law school upon graduation from the Academy. Congress has authorized the Air Force to enter 25 active duty officers into law school annually. An Academy graduate must complete two years on active duty before becoming eligible for consideration. Selection for law school sponsorship is on a competitive basis among all active duty officers who apply.

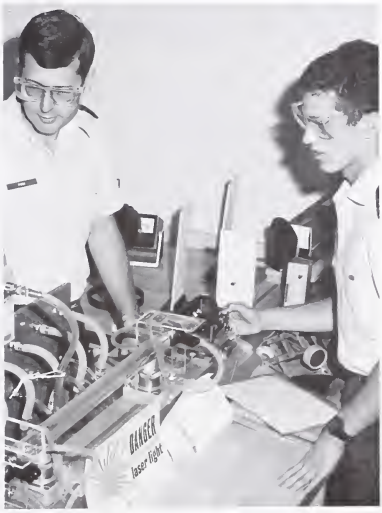
Graduate Education

Cadets who have maintained outstanding grade averages may compete for nationally competitive graduate scholarships and fellowships. Included are the Rhodes Scholarships, National Science Foundation Fellowships, National Collegiate Athletic Association Scholarships, Guggenheim Fellowships and other selected competitions. If they are physically qualified, academy graduates who receive advanced education through one of these awards usually attend flying training after completion of their graduate programs.

Graduates who ranked in the top 15 percent of their class in overall performance average who did not receive scholarships upon graduation may apply for graduate education after serving on active duty for approximately three years. These graduates are normally assured of selection for master's degree programs, provided they have performed well as officers and the Air Force has a need for the degree they wish to pursue.

Graduates who did not rank in the top 15 percent of their class may also apply for advanced degree programs early in their careers. Selection for schooling and scheduled attendance will be based on the individual's qualifications and Air Force requirements. Selected officers will have their tuition and fees paid and receive full pay and allowances.

"There is nothing worth so much as a mind well instructed."
Ecclesiastics



Career Benefits

The Air Force offers an outstanding career compensation package. The pay scale and benefits are established by congressional law. An officer receives basic pay which is taxable, and other benefits which are not taxable, including on-base living quarters and a subsistence allowance. When not occupying government quarters, the officers are allotted an off-base housing allowance.

As an Air Force officer, you will therefore receive compensation that compares favorably with most civilian professions. If

you become a pilot or navigator, you will earn flight pay in addition to basic pay. This will increase your salary considerably.

Additional benefits which you receive are: base exchange and commissary privileges, officers' club membership, recreational facilities, VA and FHA mortgage loan insurance, full medical and dental care, group life insurance, and 30 days' paid vacation each year.

"Officers can never act with confidence until they are masters of their profession."

Advancement in the Air Force is somewhat similar to advancement in a civilian occupation. It depends upon the length of performance, qualifications and service.

As you progress in rank, your advancement will be based increasingly upon your personal merit and initiative. The Air Force is a vastly technological and far-reaching organization, yet one that recognizes the value of the individual. In fact, the Air Force puts the highest premium on leaders with vision, dedication, and ability. It offers a stimulating challenge and an exciting future in a wide spectrum of fields to Academy graduates who effectively employ their leadership talents.

Normally, during your career you will be assigned to one or more of the armed forces' schools for advanced professional studies. These include the Squadron Officers School, Air Command and Staff College, and Air War College located at Maxwell AFB, Alabama. In addition, opportunities arise to attend the Armed Forces Staff College in Norfolk, Virginia and the Industrial College of the Armed Forces or the National War College in Washington, D.C. Finally, some individuals are selected to attend sister service or foreign military schools.

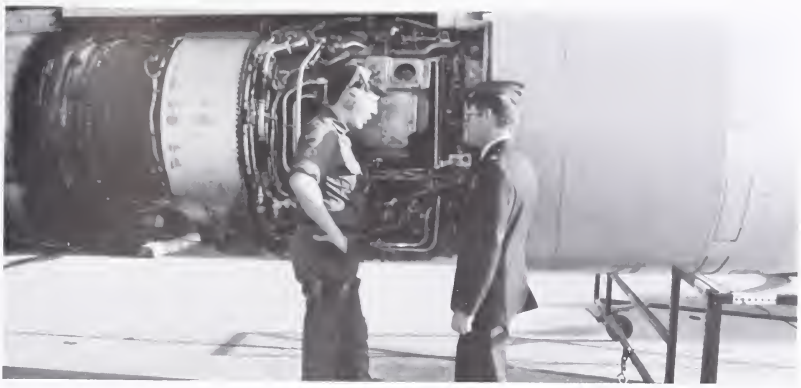
During your career you will probably have duty assignments both in the United States and overseas. Each time you move, you will obtain reimbursement for transportation costs, an extra allowance for incidental expenses of moving, and free shipment of household goods. On the average, an officer will move to a new assignment every three to four years.

The government provides for retirement at no expense to the officer. You may retire after 20 years of service at 50% of your base pay. Benefits increase proportionately to 75% of base pay at 30 years of service. You will contribute to Social Security and also receive those benefits when eligible.

A Regular officer in the armed service has excellent job security with stable employment, pay, and benefits. The Academy is the Air Force's only program which provides a Regular commission to all graduates.

Career Obligations

A career in the United States Air Force entails certain obligations as well as benefits. You are expected to serve your country with serious purpose and dedicaton. You may be considered vital to the maintenance of national or international security or important to the scientific and technological advancement of mankind. Some of your assignments may be to areas that are underdeveloped or remote or where living conditions are below standards to which you have been accustomed. Your family may not be permitted to accompany you on certain assignments. Under all conditions you will be expected to give your best efforts and provide exemplary leadership for those under your command.



"The United States Air Force Academy taught me self-confidence through challenges provided and met."

ACADEMY GRADUATE CAREER AREAS

Class of 1983

Shown below are the career areas available to Academy graduates of the Class of 1983 for their initial assignments in the Air Force.

Operations
- Pilot
- Navigator
- +Air Traffic Controller
- Air Weapons Controller
- Minuteman Missile Launch
- Titan Missile Launch
- +Space Systems Analyst

Communications-Electronics
- Communications Systems
- Communications Maintenance
- Communications-Electronics Engineer

Computer Technology
- Computer Systems Development
- Computer Operations Officer
- Computer Systems, Plans & Programs

Comptroller
- +Cost Analysis
- +Management Analysis

Civil Engineering

Logistics
- Missile Maintenance
- Aircraft Maintenance
- Munitions Officer
- +Supply Operations
- +Acquisition Contracting
- +Production Manufacturing

Intelligence
- +Signals Intelligence
- +Imagery Intelligence
- +Air Intelligence

Security Police

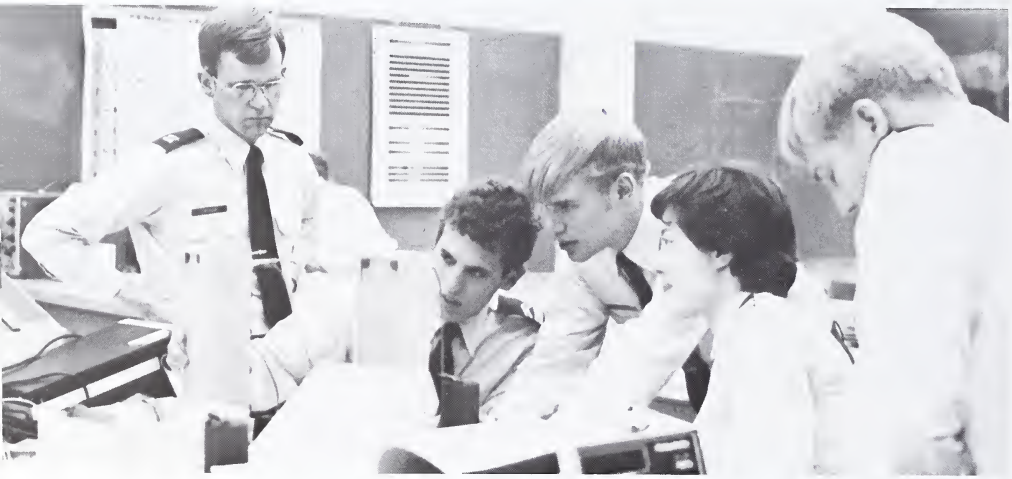
Scientific and Development Engineering
- Physicist
- +Chemist
- Scientific Analyst
- Acquisition Project Officer
- Electrical Engineer
- Mechanical Engineer
- Astronautical Engineer
- Aeronautical Engineer
- Project Engineer
- +Behavioral Scientist

+Presently limited to a specified number from each class.

CADET LIFE

Cadet Life

Although cadet life is structured, the rules, regulations, and schedules will help you organize your time and establish the self-discipline necessary to meet the challenges offered. The military environment which permeates all aspects of your life at the Academy is a vital ingredient in your training as a future Air Force officer and leader.



"The hours are long, the work load immense, and the rewards immeasurable."

Cadet Schedule

During the academic year you will attend four 50-minute classes or study periods each morning, followed by assembly for the noon meal formation. There are three periods of classes or study each afternoon. Military training is required on two mornings per week. Unless you are participating in intercollegiate athletics, you will play on a squadron intramural team two afternoons a week after classes. The other three afternoons after classes are unscheduled, and you may study or conduct personal business. You may volunteer for additional academic instruction conducted during the hour immediately following the end of classes or at any unscheduled time. After dinner you are required to study in your room or in the library. You must be in your room and in bed at taps, unless you have special permission to study late.

The following is a typical weekday schedule during the fall and spring semesters. Saturday mornings are often devoted to parades, inspections and study. Saturday afternoons and Sundays are usually free from duty.

Typical Daily Schedule

6:25	Breakfast Assembly
6:35	Breakfast
7:05-11:45	Military Training/Classes or Study Periods
12:05	Lunch Assembly and Parade
12:20-12:45	Lunch
1:00- 3:50	Classes or Study Periods
3:00- 6:30	Intercollegiate Practice
4:20- 6:20	Intramurals/Drill/Study
7:00	Dinner
7:35-11:00	Study
11:00	Taps

CALENDAR 1983-1984

6 Jun 83	Monday	Summer Term Begins
6 Jul 83	Wednesday	Class of 1987 Enters
9 Aug 83	Tuesday	Summer Term Ends
10-13 Aug 83	Wednesday-Saturday	Transition Period
15 Aug 83	Monday	Fall Semester Classes Begin
2- 5 Sep 83	Friday-Monday	Parents Weekend
5 Sep 83	Monday	Holiday, Labor Day
23-27 Nov 83	Wednesday-Sunday	Holiday, Thanksgiving Leave Period
15 Dec 83	Thursday	Fall Semester Classes End
16-21 Dec 83	Friday-Wednesday	Fall Semester Final Exams
21 Dec 83	Wednesday	Christmas Leave Begins
4 Jan 84	Wednesday	Christmas Leave Ends
5 Jan 84	Thursday	Spring Semester Classes Begin
20 Feb 84	Monday	Holiday, Washington's Birthday
23 Mar-1 Apr 84	Friday-Sunday	Spring Break Leave Period
11 May 84	Friday	Spring Semester Classes End
14-19 May 84	Monday-Saturday	Spring Semester Final Exams
25 May 84	Friday	Class of 1987 Recognition
28 May 84	Monday	Holiday, Memorial Day
30 May 84	Wednesday	Graduation Day

Leaves and Passes

During Basic Cadet Training (BCT), held during your first summer, you are not permitted to have visitors or leave the Academy. Following BCT, fourthclass cadets are allowed visitors on Saturday afternoons and evenings and on Sunday mornings and afternoons. In addition, you are also authorized to leave the Academy and go into the local area several times a month. Cadets who are placed on restriction are not allowed visitors or passes. Occasionally, you are permitted to dine out in the homes of Academy personnel. Attendance at home football games and other selected Cadet Wing events is mandatory.

When you become an upperclass cadet (second through fourth years) you will be allowed more freedom which will be gradually increased by class. As a thirdclass cadet your free time will still be limited. However, firstclass cadets have every weekend free if performance is up to standards. When granted a Friday or Saturday pass, you must return to the dormitory by taps. When you have a weekend pass, you will normally be allowed to remain away from the Academy following your last military duty Friday or Saturday until Sunday evening study time.

Individual cadets may receive more or fewer passes than their class quota, depending on individual achievement or deficiency. If you are not performing satisfactorily in military training or academic studies, your free time may be restricted. If you are doing above-average work in all

respects, your free time may be increased.

Most cadets go to Colorado Springs during off-duty time. As a fourth- and thirdclass cadet, you are not permitted to own an automobile, but may rent or borrow one if you desire. If you have a weekend pass, you are encouraged to use the bus transportation service to and from Colorado Springs. As a second- and firstclass cadet, you will be permitted to own a car and keep it at the Academy.

With the exception of your entering summer, you will be granted approximately three weeks of leave each summer. You will have approximately two weeks of leave at Christmas and one week during the spring. Emergency leave may be granted to you if an emergency involves a member of your immediate family. Other requests for special leave are considered on an individual basis.

Counseling and Advising

The Air Force Academy has a complete counseling program to help cadets make the adjustment to their new lifestyle as well as to provide counseling for their professional development as officers. The following personnel and organizations make up this total counseling program:

'I never met a man I didn't like."
Will Rogers

Air Officers Commanding (AOCs) are responsible for the morale, welfare, motivation, training and discipline of the cadets in their squadrons. Each squadron has an AOC and an Associate AOC. They will assist you in adjusting to the cadet way of life and are the primary point of contact between your parents and the Academy. They will monitor your progress, motivation, and attitude. As members of the Commandant's staff, they supervise the discipline system within squadrons and act as mediators when decisions are required. A squadron faculty officer is also available to counsel you in academic areas and to assist you with problems of academic deficiency or probation. Any of these officers will be available whether you simply need someone to talk to, or whether you seek more complete consultation or guidance.

The Cadet Counseling Center is a full-time counseling facility which closely parallels a typical college counseling service. You will have access to the counselors and to materials and facilities available at the center. Objectives of the center are to assist you in gaining maximum personal satisfaction from cadet life and attaining the highest degree of academic success in your courses.

The Cadet Career Information Office will provide you with career information to assist you in making timely and realistic selections of initial Air Force career fields, as well as advise you of personnel programs and policies which may affect your career goals.

Firstclass cadets, serving as cadet officers, play a major role in guiding you. They provide much of the training and athletic supervision within each squadron and assist in tutoring.

Curriculum and Scheduling Services personnel advise you on course selection and scheduling, academic majors, and scholarship opportunities.

Faculty instructors are available to assist you in academic course work. They also help you in selecting major academic fields and developing officer skills.

Chaplains offer counseling in personal, moral, and spiritual matters.

The Mental Health Clinic, under the Command Surgeon, offers complete psychiatric service.

Religious Activities

The Cadet Chapel is the center of religious activities for the Cadet Wing. The chapel contains Protestant, Catholic and Jewish worship areas as well as an All-Faith worship room.

Participation in religious activities is encouraged to develop individual spiritual growth and leadership potential. Attendance at services is optional, but many cadets take advantage of the opportunity to grow spiritually.

"Self-sacrifice is the real miracle out of which all the reported miracles grew."
Ralph Waldo Emerson

You may participate in any of the following activities: Sunday or Sabbath worship activities, daily morning and evening services, special denominational services and activities, cadet choirs, Bible classes, religious discussion groups, and weekend retreats. Many cadets volunteer to teach Sunday school classes in local religious education programs. There are also several cadet fellowship organizations with a large number of cadets participating, both on and off the base. Religious services are conducted by Air Force chaplains who are regularly ordained clergymen. In addition to the scheduled religious activities, the chaplains offer individual pastoral care and cadet counseling services. Guest ministers and lecturers are featured at the services periodically. Attendance at church services in local communities is permitted when cadets are free from duty.

Medical Services

The Academy has excellent, convenient medical facilities. A cadet dispensary in Fairchild Hall gives outpatient treatment and physical examinations. A cadet dental clinic in Sijan Hall provides complete dental care, including orthodontia. The Academy hospital is fully equipped and staffed with physicians and specialists. If you must be hospitalized, your academic studies will usually continue through a special program between the hospital and the faculty. If medically able, you will receive instruction either at your bedside or in a classroom in the hospital. Cadets are **not** permitted to refuse necessary medical treatment because of religious or personal beliefs.

Legal Service

The Academy provides confidential advice and assistance to cadets on personal legal matters. If you have any legal problems or need help in preparation of legal documents, the professional legal staff at the Academy will be available to you. The staff includes all officers assigned to the

Department of Law and to the office of the Staff Judge Advocate. The staff is not permitted to represent military clients in civilian courts.

Cadet Uniforms

Cadets wear a variety of uniforms depending upon the occasion and the weather. During the academic year, they wear a classroom uniform: for men it is a blue shirt and trousers; for women it is a blue blouse with a skirt or slacks. The uniform is worn with a jacket in cool weather and a parka in cold weather. A blue uniform for dress occasions is provided, with a skirt matching the jacket for women and trousers for men. Other uniforms are the mess dress for formal social functions, parade dress for formal ceremonies, and utility fatigues for field training.

"If you can't get them to salute when they should salute and wear the clothes you tell them to wear, how are you going to get them to die for your country."
Gen George S. Patton

First-, second- and thirdclass cadets may wear civilian clothes when on leave and weekend passes. Fourthclass cadets are not permitted to wear civilian clothing until approved by the Commandant. However, a blazer with slacks or skirt may be worn by fourthclass cadets when authorized.

Cadet Benefits

You will receive your education, room and board, and medical care at specified government facilities free of charge. A monthly allotment adequately covers the cost of uniforms, books, supplies, and personal needs. You are prohibited from accepting any other grant or scholarship aid, unless the donor allows you to use the financial assistance for personal expenses only. Your pay and allowances are considered sufficient for you to be self-supporting, provided you are economical. The pay is not sufficient to cover any debts contracted prior to entrance, to send money home to your parents, or to spend for luxury entertainment or expensive personal items. The money is carefully allocated monthly to cover your obligations with a modest amount left for personal spending.

A provision for saving is included in the cadet budget. You receive these savings upon graduation so you may purchase uniforms and meet other initial expenses as an officer. Additionally, the cadet budget contains provisions that allow those cadets who do not have sufficient funds available to obtain interest-free loans to cover any emergency situation.

Government-sponsored life insurance is provided at your option. A special commercial insurance plan is available to you on a voluntary basis. The plan provides term life insurance for a monthly fee, which is set aside from your monthly pay. This insurance policy may be carried forward after graduation.

CADET ACTIVITIES

Life at the Academy offers a wide choice of over 75 activities which the cadets have originated and continued on a voluntary participation basis. These activities which include professional, recreational, and competitive activities, as well as committees, media, mission support and community-

involvement organizations enable you to develop your professional interests, creative talents, hobbies, and leadership potential. Some provide opportunities for competition with regional or national teams. Weekend trips are arranged in connection with some of these events.

Cadet Wing Media

BCT Yearbook
Contrails Calendar
Dodo Newspaper
Polaris Yearbook
Talon Magazine
Icarus, Creative Writing Magazine

Mission Support Activities

Big Brothers/Big Sisters Club
Bluebards
Chorale
Drum and Bugle Corps
Falconers

Photography Club
Sabre Drill Team
Scuba Club
USAFA Explorers
Yell Leaders

Representative Competitive Activities

Aviation/Competitive Flying Team
Bicycle Club
Bowling Club
Forensic Association
Handball Club
Judo Club
Karate Club
Model Engineering Club
Parachute Team
Powerlifting Club
Rifle Drill Team
Rodeo Club
Rugby Football Club
Skeet Club
Soaring Club
Softball Club
Squash Club
Team Handball Club
Volleyball Club

Professional Activities

American Institute of Aeronautics and Astronautics
Arnold Air Society
Astronautics Club
Astronomy Club
Biology Club
Chemistry Club
Civil Engineering Society
Computer Science Club
Demolays
Electronics Club
Foreign Language Clubs
Forum
Geography Club
History Club
Mechanics Club

"The Academy experience is a mirror for looking into yourself, where you learn what type of person you are and what you want in life."

Navigation Club
Physics Club
Professional Development Club
Psychology Club

Recreational Activities

Amateur Radio Club
Archery Club
Aviation Club
Badminton Club
Chess Club
Film Club
Hunting Club
Magic Club
Military Science Club
Mountaineering Club
Racquetball Club
Saddle Club
Science Fiction and Fantasy Club
Ski Club

"My Air Force Academy experience can be summed up in one word--pride. Each day you clear one hurdle only to be faced with another a little higher. But it is the feeling I got when I met a challenge head-on and succeeded that made the hard work worthwhile."

Committees

Cadet Honor Committee
Car Committee
Class Committee
Class Ring Committee
Entertainment Committee
Fourthclass Training Committee
Heritage Committee
Way of Life Committee
Wing Allied Arts Committee

June Week

The final achievement of cadet life is the day of your graduation from the Air Force Academy. During the week prior to graduation, the Academy holds activities honoring your class with parades, socials and other events. The week has special significance for members of all classes as they look forward to new opportunities in the coming year.

Among the highlights of the week are four award ceremonies recognizing individual cadets and cadet units that have achieved scholastic, military and athletic honors. Organizations and citizens who have a vital interest in the Academy sponsor the trophies and awards.

June Week is climaxed by baccalaureate exercises, the graduation parade, and finally, the graduation exercises. Hopefully, your family and friends will be present to see you graduate and to share your accomplishments with you. You will hear a distinguished guest speaker, receive your bachelor of science degree, and take the oath of office for your commission in the Regular Air Force. The years you spent, which sometimes seemed long and difficult, may now appear short and memorable in retrospect.

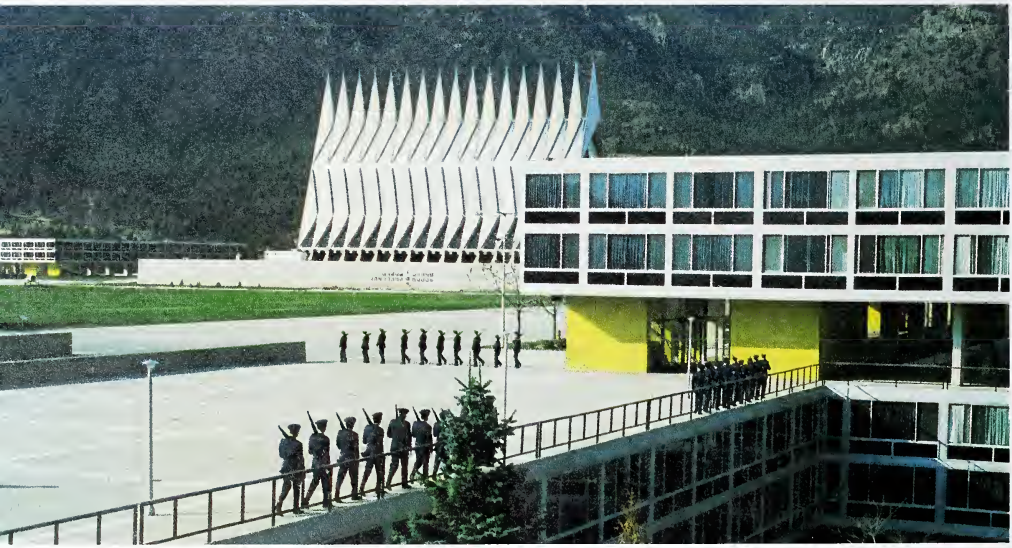
Graduation will signify your completion of an extremely challenging program which tested your intellectual, physical, moral and leadership abilities. Now that you have passed this supreme test, you are ready to serve your country and perform the duties of an officer for which you have been well prepared. This is what the Air Force Academy is all about!

HANGNER

TRADITIONAL AFRICA
ENVIRONMENT
SPIRITUAL
EXTENDED FAMILY
EMPIRES

MAZZARELLA

DICTIONARY



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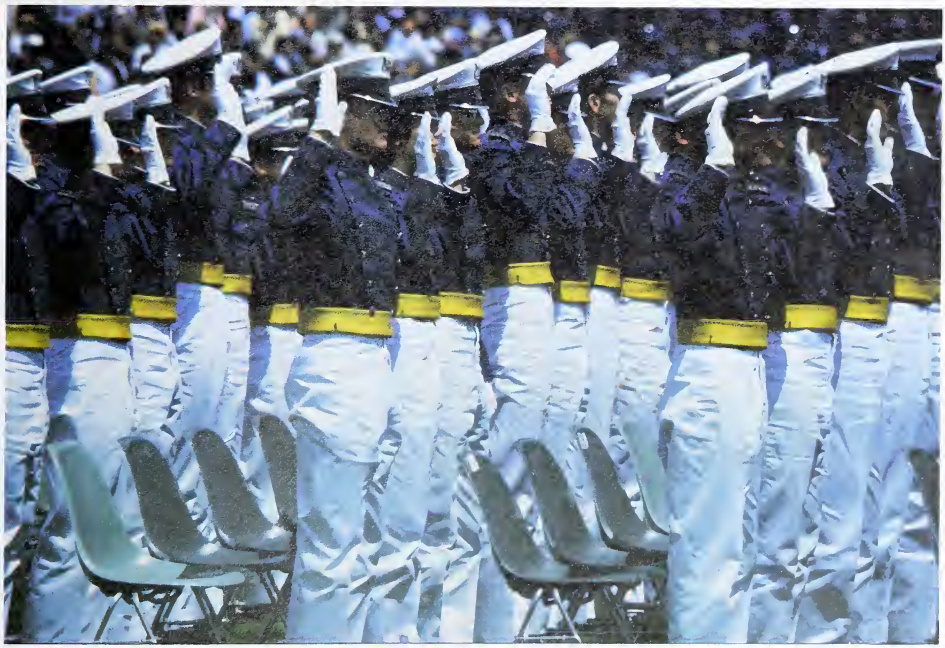
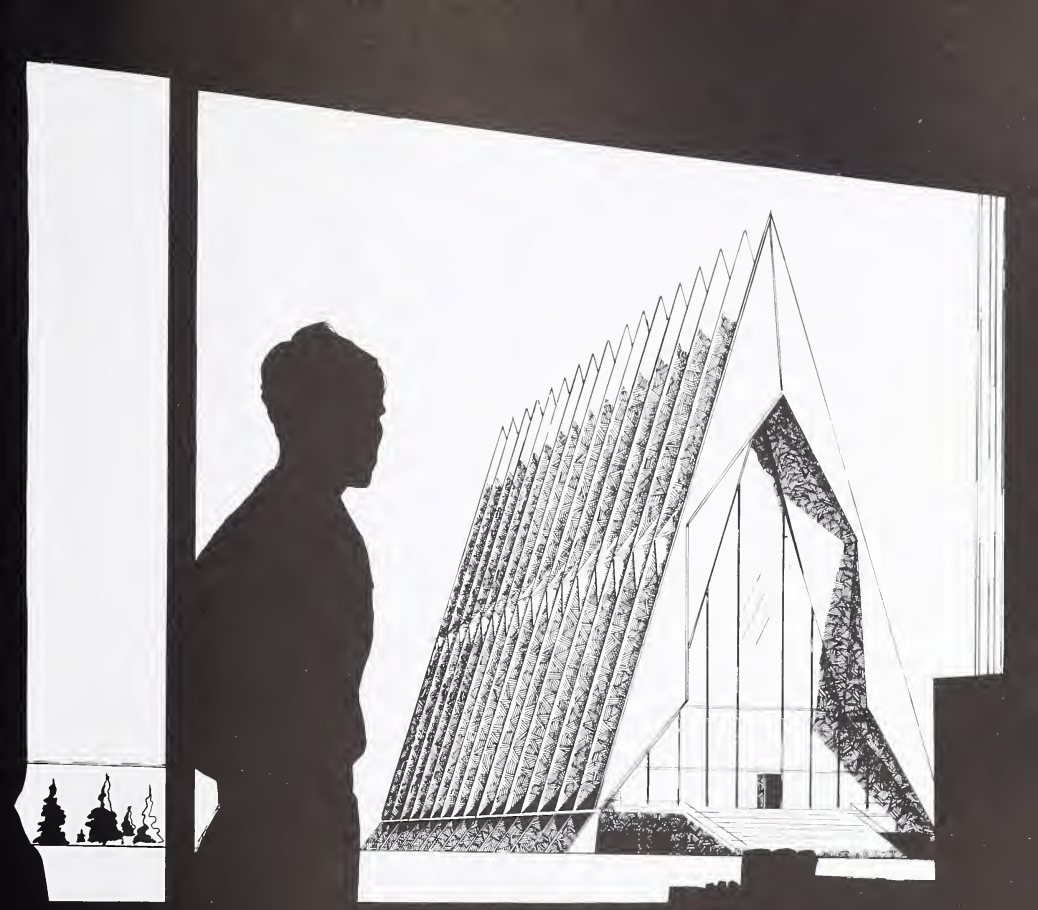
U.S. AIR FORC





I will never forget that I am an American fighting man, responsible for my actions, and dedicated to the principles which made my country free. I will trust in my God and in the United States of America.

LEADERSHIP PROGRAM

The Commandant of Cadets directs the Academy's leadership program. From a basic cadet without military experience, the program eventually develops an Air Force officer prepared and motivated to defend our country.

Leadership is based on the whole-person concept, meaning that many attributes of character, dedication, and professionalism are necessary to complement your academic education and complete your preparation for Air Force service. Fulfilling these high standards of performance, conduct, and military bearing is not easy. As you develop you will realize that worthwhile goals in life do not often come easily but, in the long run, the rewards are usually worth the effort. You will come to realize, also, that your challenge of leadership could involve great responsibility in terms of national and international security.

Leadership revolves around the primary mission of the Air Force, which is to fly and --when the government so directs--to fight in defense of national interests. Since the mission is based on airpower, the aviation training you receive as a cadet is a significant part of your career preparation.

During fall and spring semesters, you will have classroom instruction in military theory, leadership skills, values, heritage, doctrine, and Air Force organization. You will also have the opportunity to hear special presentations by well-known military and civilian leaders. These are all designed to aid in your development as a cadet and future Air Force officer. You will be active in many types of summer military and aviation training to develop leadership ability. You will be evaluated on your performance in these programs which are important parts of your cadet progress and graduation requirements. When you earn a commission in the United States Air Force, you will be expected to perform as a professional officer.

HONOR AND ETHICS

Trust and integrity are essential ingredients to our chosen profession. Without them our credibility as a fighting force would quickly erode and our country would lose its confidence in our ability to

"Be an example to your men, both in your duty and in your private life."
Field Marshall Erwin Rommel

defend its way of life. The Honor Code establishes the standard of moral behavior that we must accept. Our Honor Code states:

"WE WILL NOT LIE, STEAL, OR CHEAT, NOR TOLERATE AMONG US ANYONE WHO DOES."

These simple words provide a cornerstone for the development of a personal code of ethics designed to serve Academy graduates throughout a lifetime of service to our country. All candidates must accept the Honor Code and live strictly by its tenets. You must also be prepared to live by the principles of professional ethics that extend beyond the minimum standards of the Code. Some of these principles are confidence, courage, honesty, fairness, loyalty, acceptance of responsibility for your actions, and placing duty and service to country above self interests.

The Honor Code is administered and taught by the Cadet Honor Committee, whose members are elected from the first and second classes in each squadron. Immediately after entering the Academy, you will receive instruction in this program. The instruction is given in an informal atmosphere where you are encouraged to ask questions and resolve any problems which may arise. After basic cadet training, you will take an oath to abide by the Honor Code. From that point on you are expected to live by the principles of the Code and maintain high ethical standards.

Self-respect--that ornerstone of all virtue." ir John Herschel

The Honor Code is specific and clear in its demands. You are expected to have complete integrity in both word and deed, you will not lie or quibble, and you are expected to report yourself for any Honor Code violation. You are also expected to confront any other cadet who you believe has violated the Code and to assure that the incident is reported if your suspicions remain.

Possible breaches of the Code are brought before a board of firstclass cadets. If the circumstances surrounding a particular case are exceptional, the Honor Code Board may recommend review of the case by the Commandant of Cadets and the Superintendent. Not all violations of the Honor Code result in resignation or suspension, depending on the circumstances of each case. In all of these proceedings, the protection of a cadet's rights is of prime importance.

Beyond the administration of the Honor Code, the principles of professional ethics will be taught in many different ways throughout your four years at the Academy. This process will include several courses in the academic curriculum containing specific material on ethics.

The Honor Code is not a difficult standard to live by. Initially it may require some self-control and conscious effort, but it quickly becomes an ingrained habit and a part of your total behavior. The Honor Code greatly enhances the quality of life at the Academy. Cadets and graduates alike cherish the experience. In conjunction with the Code, the education in professional ethics will provide you with a solid foundation to serve and guide you in the complex responsibilities that lie ahead.

BASIC CADET TRAINING

Your first exposure to military life occurs in Basic Cadet Training (BCT), a rigorous orientation program during your first summer at the Academy. Your performance and attitude in this program are critical factors in your future success at the Academy. Since it is vitally important for you to understand what is expected of you, a detailed description follows:

Arrival

When you arrive, you will immediately be faced with the fact that the Air Force Academy is not a typical college or university--it is a military institution. If you didn't know it before, you will soon learn that the demands of the Academy are significantly different than those of a civilian school.

Your civilian clothes will quickly be shed for military uniforms, and your hair will be cut to Academy standards. From the start, upperclass cadets will instruct you on how to make the transition from civilian life to the Air Force. They will teach you everything from marching and proper wear of the uniform to how to successfully complete the obstacle course.

Oath

Shortly after you arrive, you will experience one of the more solemn occasions of your cadet career—taking the oath that makes you a member of the Armed Forces of the United States. By this pledge of loyalty, you promise to defend the Constitution of the United States against all enemies. It is an occasion to reflect upon what this country means to you, and what defending your country is all about. Keep in mind before you take this oath that the Air Force Academy is here to produce officers who will defend their country whole-heartedly. If you have any questions about this oath and the commitment it represents, resolve them in your own mind before you make the commitment.

The Rigors of BCT

Your first five weeks at the Academy are going to be both demanding and rewarding. The upperclass cadets who conduct BCT will lead you to your limits. In the end, however, you will emerge with a deep sense of pride in your accomplishments.

BCT consists of two different phases, one in the Cadet Area, the other in Jack's Valley. Each phase has its own demands as well as its own rewards.

BCT in the Cadet Area

The focus of this phase is transition from civilian to military life. Upperclass cadets instruct you in military topics ranging from customs, courtesies and the Air Force heritage to rifle manual and marching. You are given plenty of opportunity to demonstrate your proficiency since knowledge tests, drill and rifle manual competitions, parades and inspections are regular parts of BCT. You will also fly in several different aircraft and complete the obstacle course.

Physical conditioning is also an important part of BCT. Your daily training will include exercises, running, and competitive sports. All activities are designed to condition you to

OATH OF ALLEGIANCE TO THE UNITED STATES

"I, (name), having been appointed an Air Force cadet in the United States Air Force, do solemnly swear (or affirm) that I will support and defend the Constitution of the United States against all enemies, foreign and domestic, that I will bear true faith and allegiance to the same; that I take this obligation freely, without any mental reservation or purpose of evasion, and that I will well and faithfully discharge the duties of the office on which I am about to enter. SO HELP ME GOD."

meet the physical demands that will be placed upon you during BCT and the school year.

BCT is not all rigorous training and nonstop action, although it may seem like it at times. Regular breaks are scheduled to give you time to relax and write home, and prepare for the intense demands being placed on you. There are also special programs, such as the Doolie Dining Out which takes place in the homes of Air Force personnel and local civilians, designed to give you a break from the training.

BCT in Jack's Valley

Following the military and physical preparation of BCT in the Cadet Area, half the fourthclass moves to Jack's Valley, to be replaced by the other half a week later. Jack's Valley is a wooded area on the Academy grounds that offers a field setting for this next phase of BCT.

While in this field encampment, you wear the "fatigue" utility uniform with combat boots and live in tents. During your stay in Jack's Valley, you will take part in many activities designed to push you to your physical limits and build confidence in yourself and your fellow classmates. You will also become familiar with small unit tactics, firearms, and air base defense.

When you complete training in Jack's Valley, you march back to the cadet area to finish BCT.

"Culture shock. There is dirt, sweat and frustration in amounts never before experienced. Competition is keen."

Field Day

Field day is the final input into the squadron competition that runs throughout BCT. You and your squadron teammates compete against other BCT squadrons in events such as distance races, log relay, tug-of-war, and other events selected to test your squadron's teamwork.

Acceptance Parade

Your achievements throughout BCT are finally recognized when you receive your shoulder boards during the Acceptance Parade. An upperclass cadet from your new academic-year squadron will present you with your fourthclass shoulder boards. You are now a fourthclass cadet, the Academy's equivalent of a freshman. In succeeding years, you will become a thirdclass cadet, a secondclass cadet, and finally, a firstclass cadet. It is the end of one test, since you have proven yourself worthy to enter the Cadet Wing, but the beginning of another, since you are now entering the academic year.

Parents' Weekend

The Labor Day weekend is the first holiday of the academic year. The Academy takes this occasion to invite parents to visit their sons and daughters and to get a firsthand look at the Academy. Parents' Weekend is also an occasion for an open house of the Academy's facilities, briefings by the faculty and staff, and several social functions.

The Cadet Wing

The Cadet Wing is organized using a military chain-of-command. Each cadet is assigned to one of 40 squadrons with approximately 110 other cadets. These squadrons are organized into four groups.

Upperclass cadets learn leadership skills by filling command and staff positions within this structure.

Upperclass cadets not only lead the Cadet Wing during the school year, but during the summer as well. Such summer programs as BCT; Survival, Evasion, Resistance, and Escape (SERE); and the various aviation courses are almost entirely run by cadets who serve as commanders, instructors, and staff.

At the top of the military hierarchy of the Cadet Wing is an officer chain-of-command. The Commandant of Cadets, a brigadier general, is the commander of the Cadet Wing. Under him is a staff of officers who control the Cadet Wing, military instruction, and cadet aviation programs. They also advise the cadets on effective leadership of the Wing.

The cadet and officer chains-of-command interact to provide cadets the opportunity for input to the policies and regulations that direct their lives. Both focus on maintaining the military atmosphere and discipline necessary for the proper development of future Air Force officers.

"We can all give thanks that our country provides squadrons of men and women willing to go anywhere to save the life of one person."

MILITARY TRAINING

Fourthclass Year

BCT was your first military training experience. It prepared you to become part of the Cadet Wing. The Professional Military Training (PMT) program is designed to provide the initial foundation of Air Force knowledge and skills necessary to transition a new cadet into the Academy environment and provide the leadership skills necessary for success in the military profession.

Fourthclass PMT concentrates on developing an appreciation for the qualities of a professional officer, particularly the need for building individual professional values. You will spend considerable time studying regulations, Contrails (the Air Force Cadet Handbook), and USAFA heritage.

"The true measure of a professional lies in his ability to adapt to new situations."
Honorable Harold Brown, Secretary of the Air Force, 1966

Your first Professional Military Studies (PMS) course helps you understand the military's function in society and your role in it, first as a cadet and later as a commissioned officer. You gain an insight into why the military exists, how it fights, and the obligations and responsibilities required of a military professional.

Thirdclass Summer

All cadets must take SERE training during their thirdclass summer. The training is conducted at the Academy and in the nearby Rocky Mountains. In addition to SERE training, you will participate in two other programs:

CONUS Field Trip--During this program, you make short visits to three Air Force bases to acquaint you with operational missions of the major air commands.

The Soar-for-All Program--Instruction in ground school and dual and solo flights in Academy sailplanes which gives each cadet a firsthand experience in flying.

Thirdclass Year

The thirdclass PMT program is designed to build upon the foundation established during the fourthclass year. Thirdclass PMT concentrates on the transition from being a follower to becoming a beginning leader. To accomplish the transition, thirdclass cadets learn more about effective leadership to prepare them to actually lead and train fourthclass cadets during the next two years.

Your thirdclass PMS course focuses on airpower issues which you need to understand to be an effective Air Force leader. Building on the basic concepts gained in your first PMS course, you learn the concepts of command, doctrine formulation, strategy, and tactics as they affect airpower decision making and other concepts vital to your future warfighting role in the Air Force.

Secondclass Summer

Primary emphasis during your third summer at the Academy is placed on leadership application and increased knowledge of the Air Force. You will serve as an instructor in BCT, survival, parachuting, soaring, navigation, and other programs. You will also participate in Operation Air Force, a three-week program at an operational Air Force base, to observe and gain a better insight into the duties of officers and enlisted personnel.

Secondclass Year

The secondclass PMT program provides each secondclass cadet with practical leadership and supervisory skills for application in increasingly responsible upperclass leadership roles. Similarly, the program provides opportunities for you to assess and improve your leadership abilities and to develop them through small-unit leadership and organization.

Secondclass cadets also receive further instruction in honor and human relations issues. These discussions focus on

developing professional officers who exemplify a strong character and a mature sense of responsibility.

In your secondclass PMS course, you study military doctrine and force employment. You learn current weapon systems of the U.S. and how they are used in joint operations, focusing on airpower in an air-land battle. The course is held in a workshop environment where each cadet is given an opportunity to make decisions governing the use of combat units.

Firstclass Summer

During your fourth summer, you will be given the opportunity to further refine your leadership skills and begin to prepare yourself for commissioning as a second lieutenant. You will assume the senior leadership positions in such programs as BCT and survival training conducted at the Academy. Several optional programs are also available to round out your summer training requirements. These include:

Parachuting--Offers the option of attending Basic Airborne Training at Fort Benning or participating in the free-fall parachuting programs at the Academy.

Soaring--Advanced programs, including instructor upgrade, are available to those who have completed the basic course.

Pilot Indoctrination--Required for all firstclass cadets who will enter Air Force undergraduate pilot training following graduation. Instruction is conducted in T-41 aircraft at the Academy airfield.

Navigation--Required of all cadets not scheduled to enter undergraduate pilot training. Academics, trainers, simulators, and flight experience in T-43 jet aircraft provide knowledge of navigation fundamentals and a familiarity with the aircrew environment.

"We flew through the air and the other people walked on the ground; it was as simple as that."
Gen Carl Spaatz

Navigation Instructor--Offers selected cadets technical and professional training to serve as navigation instructors during the academic year.

Military Training Options--Provides opportunities for cadets to select programs which will help round our their professional development. (See pages 131 and 132.)

Firstclass Year

The firstclass PMT program culminates cadet military training at the Air Force Academy. It focuses on the cadets' ability to apply previously learned leadership and management principles, while providing them with the practical knowledge they will need upon graduation for entry into the Air Force.

During the fall, you will apply leadership and management skills within the Cadet Wing, while during the spring semester PMT program, firstclass cadets concentrate on specific information to prepare them for initial active duty.

Your firstclass PMS course is the capstone of your professional military studies. It focuses on analyzing military power and gives you a foundation upon which to build throughout your Air Force career. Emphasis is on military warfighting theory, and an in-depth analysis of the military of the Soviet Union.

clear realization of your future role in the flying Air Force.

Soaring Program

Soaring training is held on a year-round basis, and is available to interested cadets. The basic course includes dual and solo instruction involving approximately 25 flights. Advanced instruction leads cadets through various Federal Aviation Administration (FAA) ratings. All training is conducted in Academy sailplanes and supervised by highly qualified Air Force personnel. Primary flight instruction is given by cadet instructors.

"In soloing--as in other activities--it is far easier to start something than it is to finish it."
Amelia Earhart, 1928

AVIATION INSTRUCTION

Aviation instruction provides a varied exposure to the flight environment throughout your years at the Academy. Some courses are mandatory to ensure each cadet receives a broad aviation background. The remainder are electives available year round.

Your aviation education begins during BCT with orientation flights in a helicopter, a Cessna T-41, and a jet navigation trainer. The early timing of this training provides a

Parachute Training

Parachute training is available at the Academy to selected cadets who volunteer and meet stringent physical requirements. The basic course involves five freefall jumps, training you for an emergency egress from a disabled aircraft. Selected cadets from the basic course will take advanced courses to become parachute instructors. These cadet instructors may become members of the Wings of Blue, the Academy's highly successful precision parachute team.

Certified cadet jumpmasters who have completed the advanced parachute program provide most of the basic parachute training.

Aviation Fundamentals

During the fourthclass year, all cadets must take a basic course in Air Force flight activities, operations and space environment. You receive simulator rides, a T-43 flight mission to an Air Force base, and presentations in the planetarium. A more advanced course in aviation fundamentals is required of firstclass cadets who are not scheduled to go to Air Force undergraduate pilot training after graduation.

Pilot Indoctrination

Firstclass cadets who plan to enter undergraduate pilot training must take a T-41 pilot indoctrination course as their flight core requirement. The T-41 aircraft is a military version of the Cessna 172. The instruction is conducted at the Academy airfield by the 557th Flying Training Squadron. This training includes ground school, dual and solo flights, and totals approximately 21 flight hours.

Aviation Science

Several aviation science courses provide you with firsthand flight experience while furthering your knowledge and understanding of the flight environment. The courses teach flight concepts, instruments, and atmospheric factors. These skills are then applied during flight missions in the T-43 aircraft.

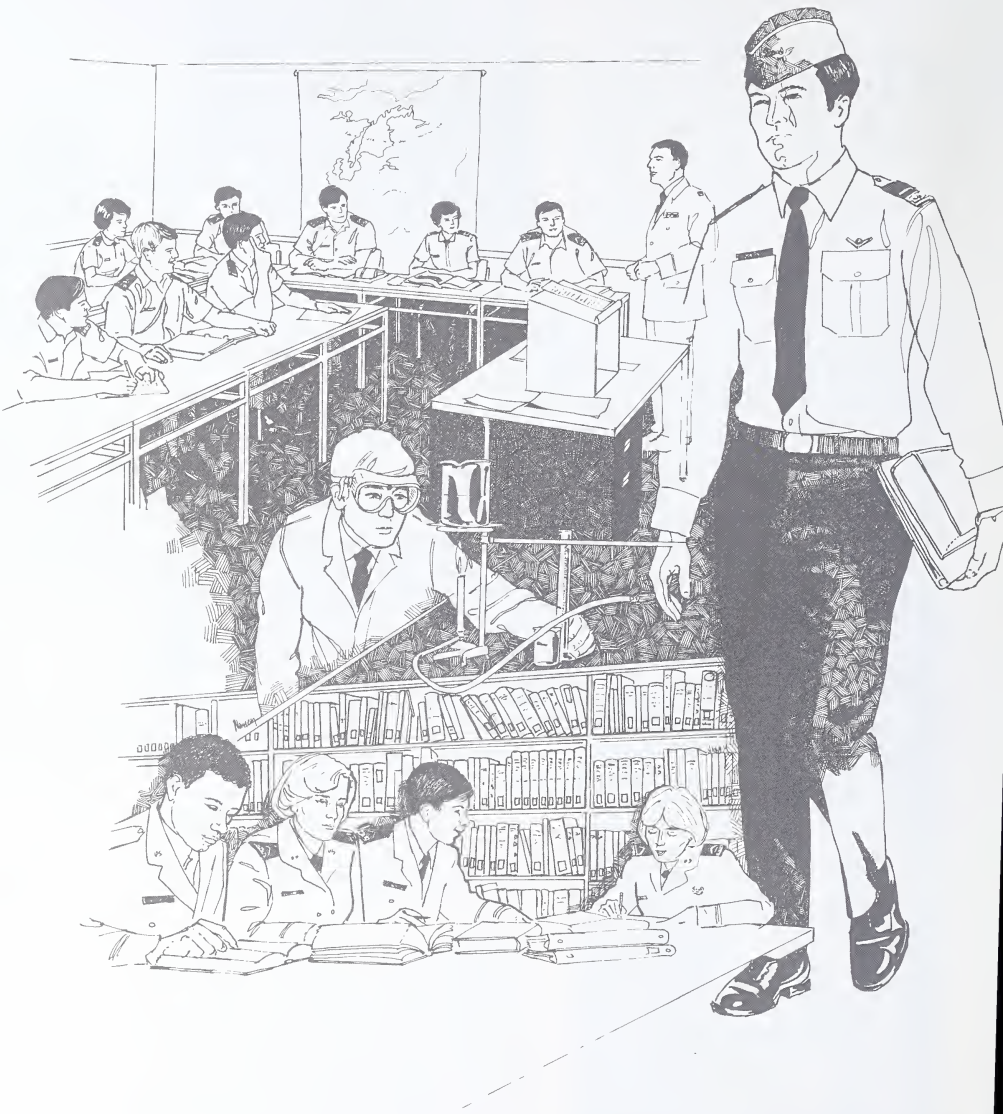
In most aviation science courses, you will take a weekend cross-country flight to an Air Force base. There you will be exposed to various operational flying units, crew members, and possibly get a flight in a first-line jet aircraft.

While most aviation science courses focus on the fundamentals of navigation, some will enable you to study the avionic systems of current and future aircraft and to work with some of this equipment in flight. You may also have the opportunity to achieve cadet instructor navigator status and provide instruction to cadets in basic navigation courses. If you plan to attend navigator training, you may take an advanced course which will better prepare you for the rigors of undergraduate navigator training.

Extracurricular Flying

If you want to pursue flying as an extracurricular activity, you may take additional light plane training as a member of the Cadet Aviation Club. You may earn FAA ratings from private pilot through instructor pilot. Training is conducted in Aviation Club-owned aircraft which include 10 Cessna 172s, a Beechcraft Sierra, a Piper Arrow and a Cessna 150.

"You will be trained to be in command. Academy graduates will be the leadership core of our Air Force in the years to come. I'm not interested in training you to be staff officers--I'm interested in training you to be commanders."
Brig Gen Anthony J. Burshnick



ACADEMIC PROGRAM

The academic program, under the direction of the Dean of the Faculty, allows cadets to acquire a broad education in the basic and engineering sciences and the social sciences and humanities. You will be required to complete a balanced sequence of prescribed courses in all of those areas. You may choose a major in one area and fulfill the requirements for a degree. Elective enrichment courses are offered to cadets who have the talents and interests to pursue further study.

The total academic curriculum develops future Air Force officers with innovative, analytical, and resourceful minds. Classroom instruction encourages you to communicate and express your ideas, thereby developing the intellectual traits of leadership. The enrichment program encourages you to develop your full academic potential and to acquire a background for possible graduate education during your future career.

After you complete basic cadet training, you will be enrolled in academic classes as a fourthclass cadet. The same expectations of achievement and performance required of you during the summer training are carried over into academics. You must learn to budget your time and study regularly in order to accomplish the academic workload, which will seem extensive in comparison to your previous requirements in high school.

Each cadet must earn at least 177 semester hours of credit, which is greater than the requirements of a civilian university. Academic courses are given primarily during fall and spring semesters. Selected courses are offered for cadets who attend the academic summer school.

Academic Core Courses

During your fourth- and thirdclass years, you will concentrate on prescribed core courses. In later years your program will contain more major courses. The standard sequence required of most cadets is shown in the Summary of the Curriculum. In a two-course sequence, the first course is offered in the fall. Single-course offerings are split between fall and spring to help balance departmental workloads. Cadets with advanced standing will take some courses ahead of schedule.

The Academic Honors Program

All academic departments offer honors versions of core courses to cadets who are qualified for more in-depth study of the course material. Additionally, each academic division offers one integrated divisional honors seminar which relates to each discipline in the division.

Each department determines specific selection criteria, although a minimum GPA of 3.0 normally is required for core honors courses. However, special permission may

"Getting through the academics at the Academy is really an exercise in effective time management and priority setting."

be granted by the appropriate department head.

Participation in core honors courses is voluntary, and cadets may return to the corresponding core course voluntarily or by direction by a prescribed point during the semester.

Cadets may qualify to have an "honors" designation on their bachelor of science degree if they complete the following requirements:

51 semester hours of core honors courses with at least nine semester hours selected from core courses in each of the four academic divisions. One integrated divisional honors seminar. 3.0 cumulative GPA and 3.5 GPA in all honors courses.

Cadets who take honors courses will acquire an excellent background for future graduate education. All of the core courses which have honors sections are noted in the Summary of the Curriculum.

"All of us have two educations; one which we receive from others; another, and the most valuable, which we give ourselves."
John Randolph

Academic Majors

Academic majors are available to all cadets who choose to major in a subject area. The total major requirements for graduation are 37 core courses plus nine major courses (total 46) for a divisional major or 11 major courses (total 48) for a disciplinary or an interdisciplinary major. Cadets who do not desire to major in one subject may choose the basic academic program, a nonmajor, constructed of the core plus eight electives that total 45 academic courses.

You must choose your academic plan after spending three semesters taking a diversity of core courses. A faculty advisor will explain the requirements of all majors and will assist you in planning a course program for future semesters based on a major or a nonmajor track. The following majors are offered:

DISCIPLINARY MAJORS

Science and Engineering

Aeronautical Engineering
Astronautical Engineering
Biology
Chemistry
Civil Engineering
Computer Science
Electrical Engineering
Engineering Mechanics
Engineering Sciences
Mathematical Sciences
Physics

Social Sciences and Humanities

Behavioral Sciences
Economics
Geography

History
International Affairs
Management

INTERDISCIPLINARY MAJORS

Operations Research
Aerospace Sciences

DIVISIONAL MAJORS

Basic Sciences
Engineering
Humanities
Social Sciences

The Enrichment Program

When cadets first enter the Academy, they must take a battery of placement/validation tests offered by the various academic departments. Based on these tests, cadets are enrolled in their first semester courses on their individual ability, preparation, and achievement. During your years at the Academy, you may participate in the enrichment program in the following ways:

Validation

You may have gained special competence through honors courses in high school, through College Board advanced placement tests, or other experience that will enable you to complete validation examinations to satisfy the requirements for comparable Academy courses. You may choose a substitute elective for a course satisfactorily validated.

Acceleration

If you have special preparation or above-average ability in a subject, you may be placed in accelerated courses which complete the requirements for a two-course sequence in one semester.

Advanced Placement

If you have special preparation or above-average ability, you may also be placed in an advanced course of a multicourse sequence. Upon successful completion of the advanced course, you receive validation credit for prior courses in the sequence. Such placement is currently accomplished in core mathematics courses.

"If you could do one thing to prepare for the academic year, it would be to learn how to study. The fact is, once you are here, it is necessary to study every night."

Transfer Credit

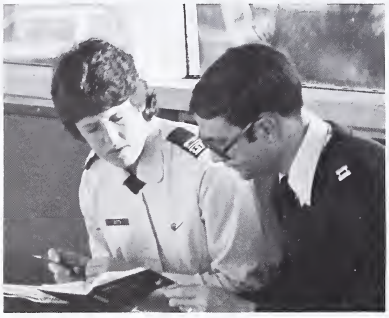
Credit may be awarded for any college course satisfactorily completed which is equivalent to a course in the Academy curriculum. This allows you to substitute other courses for those omitted through transfer credit.

Substitution

Advanced course versions are offered as substitutes for some of the prescribed courses. They allow you to concentrate on a subject in greater depth or to satisfy requirements for a particular major.

Overload

Cadets who maintain a 2.60 GPA may enroll in one course beyond the normal semester requirement. Cadets who maintain a 3.25 GPA may enroll in two courses beyond the normal semester requirement. This allows you to have a wider latitude in your course selection.



"The opportunities here are unparalled in terms of learning about yourself, enjoying a myriad of experiences, while at the same time having the chance to serve your country."

Audit

First- and secondclass cadets who maintain a 2.60 GPA may audit one course beyond the normal semester requirement. However, you may not take an overload course in addition to an audit course. Cadets who maintain a 3.25 GPA may audit one course and overload another course. You are not required to take examinations in the audit courses. Audited courses will not appear on transcripts.

Because of federal statutes, the enrichment program does not allow a cadet to graduate in less than four years. The program, on the other hand, does encourage you to take additional courses in your major field of interest, or to take diverse elective courses.

The enrichment program encourages individual initiative. A course called independent study, consisting of research work by cadets on topics of their own choosing, is offered to upperclass cadets by each academic department. Term papers and laboratory experiments provide other opportunities for you to engage in your own research.

Every effort is made to keep the content of courses up to date and abreast of current developments. To cover contemporary topics or provide special courses requested by cadets, each academic department may offer a course called special topics. The content of these courses may change from semester to semester, and may cover a wide range of topics.

Foreign Exchange Programs

The Air Force Academy currently has exchange visits of one to two weeks with the Air Force academies of Argentina, Australia, Belgium, Brazil, Canada, Federal Republic of Germany, France, Great Britain, Japan, Mexico, the Netherlands, Portugal, Saudi Arabia and Spain.

A more extensive exchange program with France includes student participation in the academic, military, and athletic activities of the host academy for a semester. Each fall semester up to eight cadets from the Air Force Academy exchange places with cadets from the Ecole de l'Air (French Air Force Academy).

Interservice Exchange Program

The Air Force Academy has exchange programs with the United States Military Academy, the Naval Academy, and the Coast Guard Academy. During one semester, small groups of Air Force cadets attend the other academies, while the Air Force Academy

reciprocates by receiving the same number of cadets from those schools. The purpose of this exchange is to provide future military leaders with a better understanding of the other services and to develop a degree of uniformity among programs at the academies.

Accreditation

The Air Force Academy is a fully accredited institution of higher learning. The standard bachelor of science degree is accredited by the North Central Association of Colleges and Schools. The Accreditation Board for Engineering and Technology, composed of representatives of the major professional engineering societies, has granted accreditation to the majors in aeronautical engineering, astronautical engineering, civil engineering, electrical engineering, engineering mechanics and engineering sciences. The major in chemistry fulfills the recommendations of the Committee on Professional Training of the American Chemical Society. Cadets who complete the requirements for one of these majors will earn a specified degree.

The Faculty

Academy courses are taught by a faculty composed primarily of Air Force officers. A few officers from the United States Army, Navy, and Marine Corps, and from the military forces of allied nations serve in a liaison capacity. The military faculty is supplemented by several visiting professors from civilian colleges and universities and many civilian guest lecturers.

An assignment to the Academy faculty is voluntary, and each applicant is normally given a personal interview. Each faculty member must hold a master's degree, and many have earned doctorates. A number of colleges and universities in the United States, as well as some foreign institutions of higher education are represented in the backgrounds of the Academy faculty.

Faculty members normally serve at the Academy for four years. Twenty-one permanent professor positions have been established by law. These include the Dean, the Vice Dean, and the department heads. Additionally, the Academy is authorized to retain up to 10 percent of the faculty strength in a tenure associate professor status, with appointments renewed on a recurring four-year basis.

"The real purpose of books is to trap the mind into doing its own thinking."

Members of the Academy faculty have responsibility beyond that of teaching their particular courses. They have an obligation to help furnish a continuing motivation for cadets to devote a career to the service of their country. They attempt to accomplish this goal through precept and example as career officers and qualified faculty members. In addition to maintaining close contact with the cadets in the classrooms and as course directors, faculty members serve as sponsors for extracurricular activities and athletics.

Faculty members perform other functions such as participating in local and national meetings of educational and professional

societies. Many of them have made contributions to the literature of their disciplines and to progress in their fields through research projects. During the summer, faculty members often serve other installations of the Air Force as consultants.

An outline of the faculty organization is as follows:

Division of Basic Sciences
- Department of Biology
- Department of Chemistry
- Department of Computer Science
- Department of Mathematical Sciences
- Department of Physics

Division of Engineering Sciences
- Department of Aeronautics
- Department of Astronautics
- Department of Civil Engineering
- Department of Engineering Mechanics
- Department of Electrical Engineering

Division of Humanities
- Department of English
- Department of Foreign Languages
- Department of History
- Department of Philosophy and Fine Arts

Division of Social Sciences
- Department of Economics
- Department of Management
- Department of Law
- Department of Behavioral Sciences and Leadership
- Department of Political Science

"I have never let my schooling interfere with my education."
Mark Twain

Instructional Methods

Faculty members may employ the entire range of teaching techniques including lectures, discussions, demonstrations, tutorials, and seminars. The small size of most Academy classes, usually 15 to 20 cadets, makes the discussion approach practical and popular. The relaxed classroom atmosphere encourages free communication between the instructor and cadets. Cadets who need assistance to develop their understanding of a subject and to improve their grades may receive extra instruction.

Academy-prepared readings, notebooks, and laboratory guides, as well as commercially published materials are used by the academic departments. Most of the materials include daily assignments, supplementary reading suggestions and discussion questions.

Departments use a variety of testing techniques, ranging from essay questions and themes to short-answer and multiple-choice items. The nature of the subject matter determines the type of test used. Quizzes are given over class materials at the discretion of the individual instructor. Most departments permit the instructor to construct class tests so that a portion of the final grade will come from measuring instruments devised with total freedom by the instructor. In preparing graded reviews and final examinations, most departments use a committee composed of instructors and professors.

Curriculum and Scheduling Services

The Directorate of Curriculum and Scheduling Services administers the entire curriculum. The directorate personnel prepare the academic calendar, publish the

curriculum handbook, conduct registration, design the course offering timetable, produce academic schedules, assign classrooms, and schedule final examinations.

Semester Schedule

An Air Force Academy education continues throughout the year. Each year is divided into three sessions: a summer term, a fall semester, and a spring semester.

The summer term is approximately nine weeks long. The new cadet class usually enters the Academy early in July and begins basic cadet training. Basic cadet training consists of a few days of processing followed by a five-week summer training period.

During this summer term, the three upper classes receive leadership and military instruction at the Academy, as well as at military bases around the United States and abroad. A limited number of academic courses are also offered. All cadets except the new class receive three weeks of leave during the summer.

The fall and spring semesters contain approximately 17 weeks of instruction, or 42 lessons per semester. The fall semester begins about mid-August and ends the week before Christmas. The spring semester begins the first week in January, following Christmas leave, and ends the last week in May. Each semester includes a final examination period of six days.

The academic week in the fall and spring semesters consists of five days, Monday through Friday, with seven 50-minute class periods per day. Unscheduled class periods are devoted to study in the library or cadet rooms. Military training is scheduled from 0705 to 0745 two mornings a week. In addition, some Saturday mornings are used for inspections, parades or other Cadet Wing activities.

Grading

Most courses at the Academy are graded on a quality point scale, with an "A" worth four quality points per semester hour, and an "F" worth zero.

Several courses, particularly military training, airmanship and physical education, are graded on a P (Pass)/F (Fail) basis.

Cadets are graded on quizzes, examinations, homework, or class recitations. For each 50-minute class period, you are normally expected to devote 100 minutes to outside preparation. You may be called upon to participate and recite in class.

A computerized grading system enables instructors to keep a constant evaluation of each cadet's performance. You are informed of your grades by a progress report at midsemester and a final report at the end of the semester.

"The key to getting what you want is to plan ahead and be realistic."

Cadet Achievement

Cadets are recognized for achievement in academic courses and military performance as follows:

Cadets with a grade point average (GPA) of 3.0 or greater are placed on the Dean's List at the end of each fall and spring semester.

Cadets who have achieved a military performance average (MPA) of 3.0 or greater are placed on the Commandant's List at the end of each fall and spring semester.

Cadets who are on both the Dean's and Commandant's Lists are placed on the Superintendent's List denoting excellence in both academic and military performance.

If your name appears on any of these lists, you are recognized for this distinction by an insignia on your uniform. A small silver star denotes the Dean's List, a silver wreath signifies the Commandant's List, and a silver star enclosed in a silver wreath indicates the Superintendent's List. If you are on any of these lists, you may be awarded additional privileges on weekends.

Deficiency and Disenrollment

Cadets may become deficient in academic studies, military training, or physical education. A cadet will be considered deficient in academic studies at midsemester report or the end of semester or term when one of the following conditions exists: a grade of F or I in one or more courses, a cumulative or semester GPA of less than 2.0 or a major's GPA less than 2.0 in the firstclass year.

Cadets deficient in studies are reviewed by a class committee at each midsemester progress report and the end of each semester or term.

At the end of each semester or term the class committee may recommend to the Academy Board that a cadet who is deficient in studies be disenrolled for academic deficiency. If the committee determines that both a cadet's overall performance and the probability of successfully completing the academic program justify it, they may recommend retention.

The Academy Board will consider the recommendation of the class committee and make final decisions.

Cadets retained by the Academy Board may be directed to accomplish one or more of the following: repeat or take a specific course during a subsequent semester, underload one course, change academic majors, attend a summer term in place of leave, be turned back to the next succeeding class, or take any other action deemed appropriate.

Cadets will be considered deficient in military performance if they fail a Professional Competency Exam at the end of the semester, or if their MPA is below 2.0 at the end of the semester. A Military Review Committee evaluates deficient cadets and places them on aptitude probation or initiates other corrective action. A cadet whose conduct or aptitude for commissioned service is seriously deficient may be disenrolled

through the action of the Review Committee, if approved by the Academy Board.

Cadets will be considered deficient in physical education if they fail one or more items on the Physical Fitness Test (PFT) and have a total score below 226, or if their 1.5 mile aerobics run time is slower than 11:45 (men) and 12:30 (women). In addition, cadets who receive a failing grade in PE 120, 220, 320 or 420 will also be considered deficient.

Deficient cadets will be reviewed by the Athletic Review Committee one week following the final PFT make-up test in the fall and spring semesters. The committee will make recommendations to the Academy Board through the Director of Athletics. Committee recommendations may include: a remedial conditioning program, athletic probation, attendance at a summer term physical education program in place of leave, turn back to the next succeeding class, or disenrollment for physical aptitude deficiency.

Graduation Requirements

All cadets must meet the following graduation requirements:

Demonstrate an aptitude for commissioned service and leadership by having a minimum cumulative MPA of 2.0.

Be satisfactory in conduct.

Be proficient in physical education and military training.

Complete the requirements for the core curriculum and for an academic major or the basic academic program.

Have a minimum cumulative GPA of 2.0 and a cumulative GPA of 2.0 in a major or the basic academic program.

"Duty, then is the sublimest word in the English language. You should do your duty in all things. You can never do more. You should never wish to do less."
Gen Robert E. Lee

Handheld Scientific Calculators

Handheld scientific calculators are the standard calculation tool in all technical courses at the Academy. Because of the need to standardize instruction in the use of programmable calculators, all cadets of a particular class will be required to own and be able to use the specific model selected for their class. Thus, you should not plan to purchase a calculator prior to entering, but wait and acquire the model provided you in August during initial textbook issue. If you have questions, write the Department of Mathematical Sciences (DFMS), USAF Academy, Colorado Springs, CO 80840, or call (303) 472-4470.

Audiovisual Services

The Directorate of Audiovisual Services provides products and services to support all cadet instruction. Among the support resources are libraries of films, slides, audio tapes and photographs. Graphic and photographic personnel prepare a variety of instructional materials and displays for classroom and laboratory use. Cadets and instructors may use the self-help facility to prepare simpie instructional aids.

Various three-dimensional models, exhibits and devices are manufactured by training devices personnel for use in laboratory experiments and classroom demonstrations. Skilled electronics technicians in the precision measurement equipment laboratory calibrate and repair all precision-measuring instruments and equipment used at the Academy.

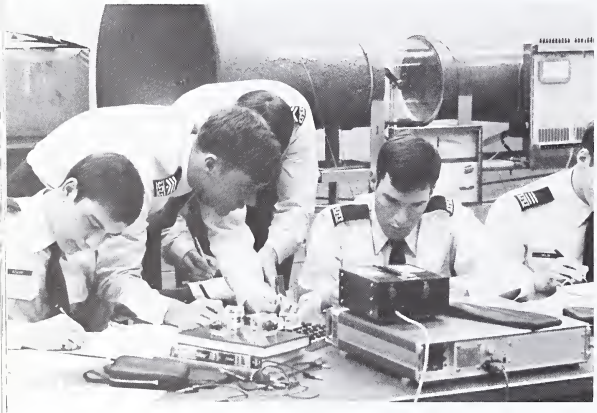
The directorate provides a closed-circuit television system to supplement live classroom instruction. This system can televise, in color, up to 12 programs simultaneously to any area in the academic building. Instructors can prepare live or videotaped lessons using several production methods. Audiovisual Services, in conjunction with the English department, instructs a cadet communications course known as "Blue Tube." Cadets present weekly TV news productions for the closed-circuit network.

Directorate personnel teach academic skills courses in reading improvement and typing to cadets.

Classrooms and Laboratories

Cadet classrooms are located in Fairchild Hall, the large academic building. Most classrooms are designed to accommodate small class sessions. However, eight 46-person rooms and eight 76-person rooms are available when larger classrooms are appropriate to the instruction. These elongated, horseshoe-shaped and tiered classrooms provide maximum student-instructor contact. Five large lecture halls are available for assemblies of cadets and for staff and faculty meetings.

Life is an endless process of self-discovery."
Gardner



The Academy is well-equipped with laboratories. The aeronautics laboratory contains a subsonic and a supersonic wind tunnel, two shock tubes, and statically mounted jet and rocket engines. The Department of Aeronautics cosponsors, in conjunction with the Seiler Research Laboratory, the operation of a 17-inch diameter low density shock tube, the largest device of its kind in the world.

The Department of Astronautics manages two laboratories which contain facilities unique to an undergraduate school. The guidance and control laboratory contains precise inertial instrument test equipment, an airborne weapons control simulator, and a space shuttle simulator for both research and classroom activities. The engineering division laboratory has metal and wood shop facilities; electronic trouble – shooting equipment, and a large variety of bench stock components to support several engineering design courses.

The Academy is currently converting its two large foreign language laboratories to a foreign language learning center with computer terminals, interactive video, and audio facilities. In addition to this learning center, foreign language instruction is conducted in 11 electronic classrooms. In these classrooms, students have an individual tape recorder and can listen to foreign language tapes and record and critique their own responses.

The Academy Planetarium is a multimedia education and research facility used for cadet instruction in astronomy, navigation, and related academic disciplines. The projector enables the instructor to simulate a multitude of realistic sky effects on the 50-foot hemispherical star theatre. Movements of stars, planets, comets, meteors and satellites can be duplicated for past, present or future time. The planetarium, with a seating capacity of 300, is used for educational demonstrations to school groups and the general public.

Cadets study astronomy in the Academy Observatory, which houses a 24-inch telescope.

Education and Research Computer Center

Data processing has become an important factor in the modern world, and is a key in the defense of our country. One of the finest undergraduate computer centers in existence supports the cadets, the future leaders of the

United States Air Force. Almost every academic discipline encourages use of the computer in the educational process. The facilities of the education and research computer center are evaluated and updated annually to ensure state of the art computer support to the Cadet Wing.

Seiler Research Laboratory

The Frank J. Seiler Research Laboratory (FJSRL) is the only scientific laboratory in the United States Air Force devoted primarily to basic research. It is named in memory of the late Colonel Frank J. Seiler, an Air Force research pioneer. The two-fold mission of FJSRL is to conduct research in chemistry, aerospace mechanics and applied mathematics and, to encourage and support Academy faculty and cadet research in a variety of disciplines. A resident staff of research scientists works closely with faculty members and cadets on Air Force projects of mutual interest. An inertial guidance laboratory and facilities for chemical synthesis and analysis are among the research equipment available for use by the FJSRL staff, the faculty and cadets.

Air Force Academy Library

The Academy Library serves the academic, research, and recreational reading needs of the Academy. The library maintains book and periodical collections, scientific and technical report collections, an audio collection, and subscribes to national and international periodicals and newspapers.

The Special Collections Branch houses complete archival records on the establishment and growth of the Academy, as well as historically significant materials on the development of the Air Force. The library also maintains a growing collection of historical aeronautical materials. The internationally renowned Gimbel Library contains one of the world's finest collections on ballooning and early flight.

The library's reference collection contains standard and specialized reference works on most subject areas and provides a means for identifying and obtaining research materials that are not owned by the library, including access to on-line data bases. In addition, United States government documents, official records of the United Nations, and documents of other international agencies are available for use.

A staff of professional librarians offers assistance at all times during the 92 hours a week the library is normally open. The staff provides a complete orientation to the library's collections, facilities and services for all new cadets and faculty members.

A recently completed major expansion improved public service facilities and patron assistance, and increased the available seating and book stack capacity. The expansion will allow for future installation of more advanced electronic media and computer services.

The Academy Library system also operates three branch libraries to serve the needs of the entire Academy population: the community library located in the Community Center area; the professional medical library in the Academy Hospital; and the law library, which is used by both the military staff lawyers and cadets, located in Fairchild Hall. Also, over 50 small reference collections are located in academic departments and staff agencies.

"There are many gifts which can be exchanged between two people; but the exchange of knowledge between individuals is the greatest—it lasts forever."

SUMMARY OF THE CURRICULUM

For the Class of 1987

COURSE NUMBER	COURSE TITLE	SEMESTER HOURS
	Fourthclass (Freshman)	
Summer		
Mil Tng 100	Basic Cadet Training	5
Phy Ed 100	Basic Physical Training	2
		7
Fall and Spring		
Beh Sci 110*	General Psychology	3
Biology 110*	Introduction to Biological Systems	1.5
Chem 111-112*	General Chemistry	6
Comp Sci 100*	Introduction to Computer Science	3
English 111*	English Composition	3
For Lang 131-132	Basic Foreign Language	4.5
History 101*	Modern World History	3
Math 131-132-133*	Calculus	9
PMS 110	Professional Foundations	2
AV 100	Introduction to Aviation and Space Science	1
Phy Ed 105-106	Competitive Athletics/Fitness Test	2
Phy Ed 120	Physical Education	1
		39
	Thirdclass (Sophomore)	
Summer		
Mil Tng 200	Summer Military Options	2
Mil Tng 210	Survival, Evasion, Resistance and Escape	2
		4
Fall and Spring		
Beh Sci 220*	Behavioral Applications to Leadership	1.5
Econ 221*	Principles of Microeconomics	3
Econ 222*	Principles of Macroeconomics	1.5
El Engr 210*	Digital Signals and Systems	3
English 212*	Composition and Speech	3
Engr 110*	Engineering Fundamentals	3
History 202*	Modern Warfare and Society	3
Mgt 203*	Introduction to Management	1.5
Math 211*	Differential Equations with Matrix Algebra	3
Math 220	Probability and Statistics	3
Mech 210*	Engineering Mechanics and Materials	3
Physics 211*	General Physics I	3
Pol Sci 200	Introduction to Political Science	1.5
Pol Sci 201*	American National Government	1.5
Pol Sci 203*	The International Political System	2
PMS 225	Command and Control of Airpower	2
Phy Ed 205-206	Competitive Athletics/Fitness Test	2
Phy Ed 220	Physical Education	1
		41

COURSE NUMBER	COURSE TITLE	SEMESTER HOURS
	Secondclass (Junior)	
Summer		
Mil Tng 300	Summer Military Options	4
Fall and Spring		
Aero 311*	Fundamentals of Aeronautics	3
Aero 312*	Introductory Engineering Thermodynamics	3
Beh Sci 330*	Behavioral Applications to Leadership	1.5
El Engr 310*	Electronic Circuits and Systems	3
English 330*	Technical Writing or	
or 350*	Advanced Composition	3
History 303	The U.S. in a Changing World	1.5
Law 300*	Introduction to Law	3
Philos 310*	Ethics	3
Physics 311*	General Physics II	3
Electives	Academic Electives	12
PMS 330	U.S. Force Employment Concepts	2
Phy Ed 305-306	Competitive Athletics/Fitness Test	2
Phy Ed 320	Physical Education	1
		41
	Firstclass (Senior)	
Summer		
Mil Tng 400	Summer Military Options and Flight Core[1]	5 to 7
Fall or Spring		
Astro 332*	Introduction to Astronautics	3
Engr 430	Engineering Systems Design	3
English 406*	Values in Literature	3
Law 400*	Law for Commanders	3
Physics 411*	Modern Physics	3
Pol Sci 412*	American Defense Policy	3
Electives	Academic Electives	12 to 21
PMS 440	Military Theory and Force Analysis	3
Phy Ed 405-406	Competitive Athletics/Aerobics Test	2
Phy Ed 420	Physical Education	1
		36 to 45
	TOTALS:	
	Academic Core Courses	111
	Academic Elective Courses	24 to 33
	Military/Flying Courses	28 to 30
	PE/Athletic Courses	14
	Total Curriculum[2]	177 to 188

[1]Flight core may be taken summer, fall or spring.
[2]Total curriculum hours depend on major selected (if any) and flight core scheduling.
*Honors versions of these courses are offered.

ACADEMIC MAJORS

"Whenever a teacher says 'open book' you have to consider the fact he assumes the book isn't going to do you any good."
J. M. Darley

The curriculum includes 23 academic majors administered by the faculty departments and divisions. Each cadet who chooses to major in a subject area must complete all the requirements. If not satisfied with the original major selected, a cadet may change the major, provided requirements can be met without excess overload courses. A cadet may earn more than one major if all requirements are fulfilled. Some major courses are mandatory while others allow for optional choices. The optional courses specify open options and/or academic divisional options. These are defined as follows:

Open Option: Any graded course under supervision of the Dean of the Faculty for which at least two semester hours credit is awarded. Open options also include Aviation 470, 471, 490, 495, and 499, under the supervision of the Commandant of Cadets; Physical Education 440, 460, 495, and 499 under the supervision of the Director of Athletics.

Academic Divisional Option: Any course unit from the offerings of the Basic Sciences, Engineering Sciences, Social Sciences or Humanities Divisions.

Aeronautical Engineering Major

Administered by the Department of Aeronautics

In the Aeronautical Engineering major sequence of courses, cadets may emphasize aircraft flight mechanics, propulsion, aerodynamics or structures. Cadets who successfully complete this major receive the Bachelor of Science in Aeronautical Engineering degree.

In addition to the core curriculum, the following courses are required for the major:

Aero 356.	Flight Mechanics I
Aero 371.	Aerodynamics I
Aero 372.	Aerodynamics and Design
Aero 450.	Aeronautical Laboratory
Aero 461.	Propulsion I
Aero 471.	Aerodynamics II
Math 351.	Applied Differential Equations

Two course units of either Aircraft Design (Aero 464) or Propulsion Design (Aero 466)

Two course units selected from offerings of the Engineering or Basic Sciences Divisions

Aerospace Sciences Major

Administered by the Department of Astronautics

The Aerospace Sciences major provides a broad program of study with nearly equal emphasis in the various disciplinary areas. It is intended to prepare the cadet for widely varied Air Force duties and graduate educational opportunities without special orientation to any single academic discipline at the undergraduate level.

In addition to the core curriculum, 11 majors courses are required, consisting of one course from each of the 11 categories below, with not more than three courses overall from any single discipline in the first nine categories. Any course may be counted toward only one of the 11 categories.

1. *The Military Profession*

Beh Sci 377.	Organizational Behavior and Industrial Psychology
Beh Sci 490.	Counseling and Group Dynamics

English 484.	Literature of War
Hist 371.	Air Power and Modern Warfare
Hist 382.	Science, Technology, and Warfare
Hist 457.	History of Military Thought
Mgt 361.	Management of Human Resources

2. *Heritage and Values*

Area Studies 351.	The American Identity
Beh Sci 352.	Social Psychology
English 373.	The Novel Today
Fine Arts 451.	Introduction to Visual Arts
Fine Arts 477.	American Art and Music
Geog 350.	Cultural Geography
Hist 335.	Regional History of the United States
Hist 480.	The American Way of Life
Hist 494.	The American Way of War
Law 451.	American Constitutional Law
Philos 382.	American Philosophy
Philos 400.	Great Religions of the World
Pol Sci 352.	Political Theory

3. *National Security Issues*

Econ 374.	Survey of International Economic Issues
Geog 370.	Political Geography
Hist 332.	History of U.S. Foreign Relations
Hist 363.	Unconventional Warfare
Law 461.	International Law
Pol Sci 383.	American Foreign Policy: Process and Issues
Pol Sci 421.	Political Violence and Revolutionary Change
Pol Sci 460.	Comparative Defense Policy
Pol Sci 472.	Politics of the USSR

4. *Management*

Beh Sci 377.	Organizational Behavior and Industrial Psychology
Econ 356.	Macroeconomic Theory
Law 462.	Government Contract Law
Mgt 341.	Fundamentals of Accounting
Mgt 446.	Organizational Theory
Mgt 472.	Administrative Policy and Strategy
Mgt 485.	Systems Acquisition and Management
Pol Sci 385.	Defense and Public Administration

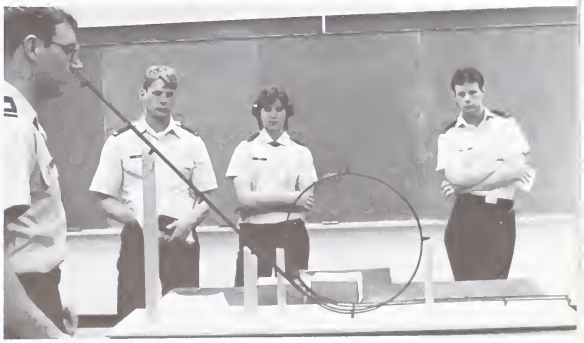
5. *Analytical Methods*

Beh Sci 331.	Basic Research Design and Statistics
Chem 222.	Analytical Chemistry
Comp Sci 362.	Computer Simulation
Geog 340.	Cartography
Hist 330.	Historical Methods
Mgt 331.	Statistical Decisions in Management
Math 310.	Mathematical Modeling
Math 341.	Introductory Numerical Analysis
Math 351.	Applied Differential Equations
Math 358.	Statistics (Prereq: Math 357 taken in place of Math 220)
Math 360.	Linear Algebra
Mech 320.	Dynamics
Philos 360.	Applied Reasoning
Philos 370.	Introduction to Symbolic Logic
Pol Sci 349.	Political Analysis

6. *Environment*

Aero 472.	Thermodynamics of Energy Conversion
Bio Sci 380.	Bioenvironmental Science
Chem 381.	Chemistry of the Environment
Geog 353.	Physical Geography
Physics 370.	Introduction to Space Science
Physics 480.	Astronomical Techniques

"Never tell people how to do things. Tell them what to do and they will surprise you with their ingenuity."
Gen George S. Patton, Jr.



7. *Systems*

Astro 360.	Space Vehicle Systems
Comp Sci 340.	Structured FORTRAN for the Scientist/Engineer
Comp Sci 351.	Computer System Organization
El Engr 487.	Real-Time Computation
Engr 350.	Linear Systems Analysis and Design
Engr 351.	Aerospace Engineering Techniques

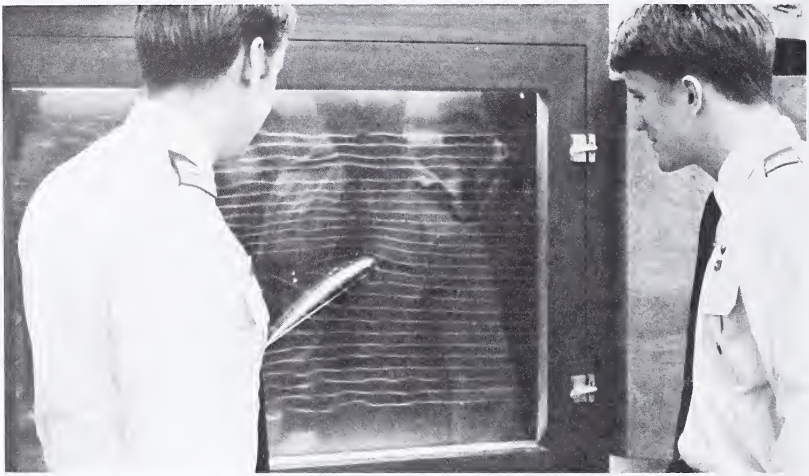
8. *Aerospace Technology*

Aero 356.	Flight Mechanics I
Aero 371.	Aerodynamics I
Aero 461.	Propulsion I
Civ Engr 481.	Air Base Engineering
Geog 382.	Geographic Application of Imagery Analysis
Mech 331.	Aircraft Structures

9. *Aerospace Applications*

Astro 451.	Astrodynamics
Av 470.	Applied Aviation and Navigation Theory
Av 471.	Advanced Applied Navigation
Av 490.	Avionics Concepts and Systems Development
Physics 480.	Astronomical Techniques

"The challenge of being creative in the military is the challenge of doing the most given the least."



10. *English*

English 370. Advanced Speech

11. *Breadth Option*

Any additional upper division course (course number 200 or greater) offered in the four academic divisions as well as Av 470, 471, or 490.

Astronautical Engineering Major

Administered by the Department of Astronautics

The Astronautical Engineering major is the broad application of science and engineering to aerospace operations. Special emphasis is placed on astrodynamics, aerospace systems design, and control systems. Thus, the cadet is prepared for Air Force duty with specialization in research, design, development, and analysis of space technology and aerospace avionics. Cadets who successfully complete this major receive the Bachelor of Science in Astronautical Engineering degree.

In addition to the core curriculum, the following courses are required for the major:

Astro 360.	Space Vehicle Systems
Astro 451.	Astrodynamics
Astro 452.	Linear Control Systems Analysis and Design
Astro 468.	Aerospace Vehicle Systems Design
Engr 350.	Linear Systems Analysis and Design
Engr 351.	Aerospace Engineering Techniques
Math 351.	Applied Differential Equations

Two courses from a list of Engineering Science options approved by the advisor

Design Option: Astro 466, Digital Control Theory and Design, or Astro 470, Space Mission Design

One 300- or 400-level course from the offerings of the Engineering Sciences Division or the Basic Sciences Division

Basic Sciences Major

Administered by the Basic Sciences Division

The major in Basic Sciences is designed for the student with an interest in the broad scope of science. It allows the cadet to sample a range of scientific areas with a limited degree of specialization in the area of most interest to them. Departmental options must be chosen from offerings of the Departments of Chemistry, Computer Science, Biology, Mathematical Sciences and Physics. The science options are courses selected from the basic and engineering sciences fields, including a total of 12 disciplines.

In addition to the core curriculum, the following courses are required for the major:

One course from the offerings of each of the five departments in the Basic Sciences Division
One additional Basic Sciences Division course
Two science courses from Basic Sciences or Engineering Sciences Division
One academic divisional option

Behavioral Sciences Major

Administered by the Department of Behavioral Sciences and Leadership

The major in Behavioral Sciences provides the cadet with the facility for understanding human behavior, the capability of handling human problems throughout a career as an Air Force officer, and the basis for continuing development as a military leader. The major is divided into three areas of emphasis: psychology, organizational behavior, and human factors engineering. The factual knowledge and concepts developed are contemporary in scope and of particular importance to the education of all officers in operational command positions and those contemplating a career in behavioral science research, human factors engineering, personnel psychology, social actions, clinical psychology, and organizational behavior.

In addition to the core curriculum, the following four courses are required for all areas of emphasis in this major:

Beh Sci 331. Basic Research Design and Statistics
Beh Sci 332. Advanced Research Design
Beh Sci 352. Social Psychology
Beh Sci 435. Theories of Learning

There are different course requirements for each area:

1. *Psychology*

Beh Sci 380. Theories of Personality
Beh Sci 385. Abnormal Psychology
Beh Sci 450. Psychobiology

"The amazingly complex and diverse education the Academy offers boils down to one result: a well-educated, confident officer."

Beh Sci 490. Counseling and Group Dynamics
Beh Sci 495. Special Topics
Two open options

2. *Organizational Behavior*

Beh Sci 377. Organizational Behavior and Industrial Psychology
Beh Sci 464. Organizational Development
Beh Sci 495. Special Topics
Mgt 361. The Management of Human Resources
Mgt 446. Organization Theory
Two open options

3. *Human Factors Engineering*

"Integrity, sensitivity, realism, humor and patience--these are the five things that got me through."
Ambassador Bruce

Beh Sci 373.	Human Factors Engineering: Concepts and Theory
Beh Sci 374.	Human Factors Engineering: Applications and Evaluation
Beh Sci 377.	Organizational Behavior and Industrial Psychology
Beh Sci 450.	Psychobiology
Beh Sci 471.	Attention and Human Performance
Civ Engr 481.	Air Base Engineering
or	
Mgt 485.	Systems Acquisition and Management

Open option

Other course offerings:

Beh Sci 499. Independent Research

Biology Major

Administered by the Department of Biology

Biology is the study of life. An appreciation of the unity and diversity of life on this planet is a necessity for meaningful interaction with your total environment. Understanding biological principles is vitally important if you want to be a well-educated and committed officer as well as an informed member of society. The Biology major is intended for the student whose interests and abilities lie in any area of biological science. It provides cadets the undergraduate prerequisites for the advanced training required for admission into biologically oriented career fields. The use of laboratory methods is emphasized for reinforcement of lecture material and for individual research projects. This major also provides for an interdisciplinary approach in the areas of environmental science and human performance, as well as a general biology track.

In addition to the core curriculum, the following courses are required for the major:

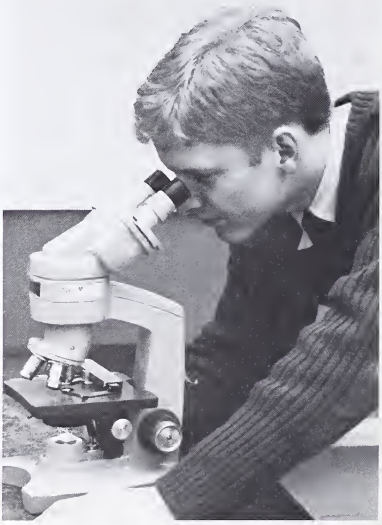
Biology 330.	Basic Biological Science I
Biology 331.	Basic Biological Science II
Biology 380.	Bioenvironmental Science (Ecology)

Four additional Biology course units (see course descriptions)
Three academic divisional options; one open option

Chemistry Major

Administered by the Department of Chemistry

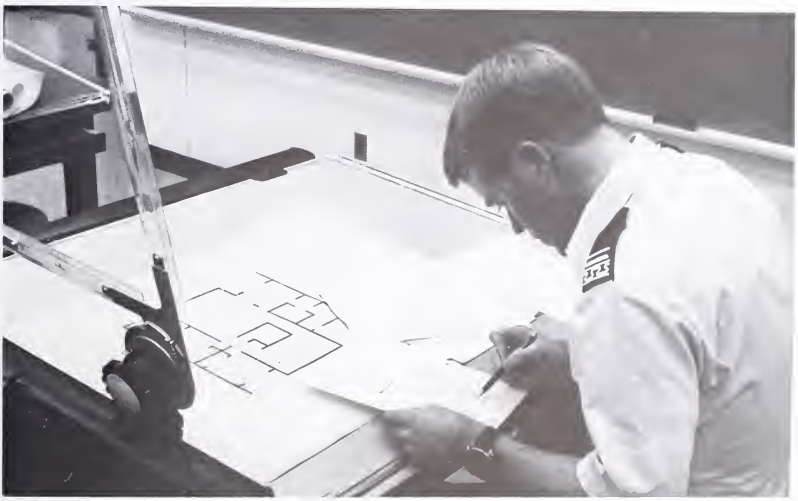
The major in Chemistry is recommended for those who are interested in chemical or biochemical research or applications. It provides fundamental knowledge in analytical, inorganic, organic, and physical chemistry and allows the cadet to select one or two of these areas for advanced study. The major is designed to prepare students for a



junior officer position in research, development, or graduate training. It emphasizes the use of laboratory methods for reinforcement of lecture material and individual research projects. Cadets successfully completing this major receive the Bachelor of Science in Chemistry degree.

In addition to the core curriculum, the following courses are required:

Chem 222. Analytical Chemistry
Chem 233-234. Organic Chemistry I and II
Chem 243-244. Organic Chemistry I and II Lab
Chem 335-336. Physical Chemistry I and II
Chem 345-346. Physical Chemistry I and II Lab
Chem 431. Theoretical Inorganic Chemistry
Chem 453. Instrumental Methods of Chemical Analysis
One science course unit selected with approval of the faculty advisor



"Make no small plans, for they have no magic."
Tom Ford

This sequence fulfills the recommendations of the Committee on Professional Training of the American Chemical Society. Cadets in this major should take German or Russian to satisfy the core language requirement.

An alternate sequence in general chemistry reduces the number of laboratory courses and is designed for students wishing to combine an emphasis in chemistry with advanced courses in other disciplines. While this sequence does not fulfill the requirements for the Bachelor of Science in Chemistry specified by the American Chemical Society, it does allow a degree in an interdisciplinary program tailored to various Air Force careers.

In addition to the core the following are required:

Chem 233-234. Organic Chemistry I and II
Chem 243. Organic Chemistry Lab
Chem 335-336. Physical Chemistry I and II
Chem 345. Physical Chemistry Lab
One of the following courses:
Chem 222. Analytical Chemistry
or
Chem 224. Organic Chemistry Lab
or
Chem 346. Physical Chemistry Lab
or
Chem 453. Instrumental Methods of Chemical Analysis
Any 400-level chemistry course
Two science options; one open option

Civil Engineering Major

Administered by the Department of Civil Engineering

The major in Civil Engineering provides a well-balanced program stressing the fundamentals common to the many areas of the civil engineering profession. The major is designed to prepare cadets for duty in the Air Force with some specialization in the civil engineering discipline including research, development, design, and construction of

facilities to support manned and unmanned weapons systems and the space program. The major provides excellent preparation for graduate study in any of the branches of civil engineering. Cadets successfully completing this major receive the Bachelor of Science in Civil Engineering degree.

In addition to the core curriculum, the following courses are required for the major:

Civ Engr 361. Fundamental Hydraulics
Civ Engr 372. Behavior and Analysis of Structures
Civ Engr 381. Engineering Measurements and Construction
Civ Engr 392. Soil Mechanics
Civ Engr 454. Structural Dynamics
Civ Engr 471. Behavior and Design of Concrete Members
Civ Engr 472. Behavior and Design of Steel Members
Math 351. Applied Differential Equations
Mech 320. Dynamics
One civil engineering-related course selected from the following:
Civ Engr 462. Water Supply and Waste Disposal
Civ Engr 473. Structural Design
Civ Engr 491. Foundation Engineering
One course from the offering of the Basic Sciences or Engineering Sciences Divisions.

"It's what you learn after you know it all that counts."
John Wooden

Computer Science Major

Administered by the Department of Computer Science

The major in Computer Science provides a broad background in computer programming, languages, systems, and applications with emphasis on electronic digital computers. The major provides officers highly qualified in the rapidly growing areas of computer research, computer management, and the application of computers to complex scientific, engineering, information, and management problems.

In addition to the core curriculum, the following courses are required for the major:

Comp Sci 351. Computer System Organization
Comp Sci 356. Computer Architecture and Performance Evaluation
Comp Sci 362. Computer Simulation
Comp Sci 380. Algorithms and Data Structures
Comp Sci 453. Systems Analysis and Design I
Comp Sci 454. Systems Analysis and Design II
Comp Sci 467. Computer Networks and Communication
Math 341. Introductory Numerical Analysis
One computer science-related course unit selected from a list of approved options
A two-course sequence in: Management Applications, Scientific Applications, or System Software

1. *Management Applications*

Comp Sci 362. Computer Simulation
Math 363. Operations Research/ Management Science I

2. *Scientific Applications*

Comp Sci 473. Digital Control
Comp Sci 474. Small Computers and Graphics

3. *System Applications*

Comp Sci 483. Operating Systems
Comp Sci 484. Programming Systems

Economics Major

Administered by the Department of Economics

The major in Economics is designed to provide the cadet with the capability of performing economic analysis, especially to resource allocation problems associated with national security. The major is constructed on a solid foundation of economic theory and is extended by training in quantitative analysis techniques and by study in alternative specialized fields of the economics discipline.

In addition to the core curriculum, the following courses are required for the major:

Econ 333. Price Theory
Econ 347. Quantitative Economic Methods
Econ 356. Macroeconomic Theory
Econ 465. Introduction to Econometrics
Econ 478. Seminar in Defense Economics
Five course units approved by the major advisor
One open option

Electrical Engineering Major

Administered by the Department of Electrical Engineering

The Electrical Engineering major provides an opportunity to study the electrical and electronic generation, transmission, and processing of information. Emphasis is given to the fundamental concepts which find wide applicability and use in the Air Force weapons and support systems. This program is of particular value to cadets who will pursue Air Force careers in communications-electronics and research and development. Cadets who successfully complete this major receive a Bachelor of Science in Electrical Engineering degree.

In addition to the core curriculum, with El Engr 340 as a substitute for El Engr 310, and Math 357 as a substitute for Math 220, the following courses are required for the major:

El Engr 341. Electronics I
El Engr 342. Electronics II
El Engr 346. Signal and System Analysis
El Engr 351.* Laboratory Techniques
El Engr 352.* Electronics Laboratory
El Engr 443. Electromagnetics
El Engr 464. Design
El Engr 465.* Design Laboratory
Math 330. Applied Vector Analysis
El Engr Options (three).
Science Option. One course unit offered by the Basic or Engineering Sciences Divisions selected with approval of the faculty advisor.
*Three one-semester-hour labs

Engineering Major

Administered by the Department of Civil Engineering

"The Air Force Academy experience maximizes the personal and professional development of cadets, helping them realize their potential by building responsibility for their actions and the consequences of those actions."

The major in Engineering is designed for the student whose ability and interests lie in the area of the engineering sciences, but who has not selected an area of specialization in one of the engineering disciplines or who has an interest in an area of engineering that requires a broad engineering background. This major provides a broad education in engineering sciences as preparation for effective performance in the technical specialties and for future graduate study in engineering.

In addition to the core curriculum, four of the following six courses are required for the major:

Aero 356.	Flight Mechanics I
Civ Engr 381.	Engineering Measurements and Construction
Comp Sci 340.	Structured FORTRAN for the Scientist/Engineer
El Engr 360.	Instrumentation Systems
Engr 350.	Linear Systems Analysis and Design
Mech 320.	Dynamics

Three courses from the offerings of the Engineering Sciences Division or the Department of Mathematical Sciences

One academic divisional option; one open option

Engineering Mechanics Major

Administered by the Department of Engineering Mechanics

"The pupil who is never required to do what he cannot do, never does what he can do."
John Stuart Hill

The major in Engineering Mechanics is designed to provide engineers with a broad base of knowledge in fundamental engineering with depth in the areas of dynamics, aircraft structural analysis and design, and materials engineering. The major provides an excellent foundation for further education in a variety of fields. Cadets who successfully complete this major receive the Bachelor of Science in Engineering Mechanics degree.

In addition to the core curriculum, the following courses are required for the major:

Aero 356.	Flight Mechanics I
or	
Aero 363.	Heat Transfer
Math 351.	Applied Differential Equations
Mech 320.	Dynamics
Mech 331.	Aerospace Structural Mechanics
Mech 332.	Aerospace Structural Design
Mech 352.	Mechanical Properties of Materials
Mech 461.	Experimental Mechanics
Mech 462.	Engineering Design

Three courses in one of two sequences:

Structures Sequence

Mech 420.	Vibrations
or	
Mech 495.	Special Topics
Mech 432.	Advanced Structural Mechanics

Materials Sequence

Mech 342.	Introductory Metallurgy
Mech 451.	Physical Metallurgy

One course from the offerings of the Basic Sciences or Engineering Sciences Divisions

Engineering Sciences Major

Administered by the Department of Engineering Mechanics

The major in Engineering Sciences provides a broad education in the engineering sciences as preparation for effective performance in an engineering specialty and for future graduate study in engineering. Cadets who successfully complete this major receive the Bachelor of Science in Engineering Sciences degree.

In addition to the core curriculum, the following courses are required for the major:

Aero 356.	Flight Mechanics I
or	
Aero 461.	Propulsion I
Aero 371.	Aerodynamics I
Astro 360.	Space Vehicle Systems
or	
Astro 452.	Linear Control Systems Analysis and Design
El Engr 360.	Instrumentation Systems

Engr 350. Linear Systems Analysis and Design
Math 351. Applied Differential Equations
Mech 320. Dynamics
Mech 331. Aerospace Structural Mechanics
A two course unit design sequence in one of the following areas: Aircraft Vehicles, Propulsion, Control Systems, Space Vehicles, Computer Design, Electronics, Aerospace Structures, Experimental Mechanics, Materials
One course from the offerings of the Basic Sciences or Engineering Sciences Divisions

Geography Major

Administered by the Division of Social Sciences (Office of Instruction for Geography)

The major in Geography provides an understanding of the complex geographic relationships in the world today. Built on a foundation in both cultural and physical geography, the major offers a concentration in physical, cultural, or regional geography. The geography major is of particular value to those cadets contemplating Air Force careers in operations planning, foreign area analysis or intelligence.

In addition to the core curriculum, the following courses are required for the major:

Geog 320. Principles of Geography
Geog 340. Cartography
or
Geog 382. Geographic Application of Imagery Analysis
Geog 342. Analytical Techniques in Geography
Geog 350. Cultural Geography
or
Geog 370. Political Geography
or
Geog 372. Economic Geography
Geog 352. Climatology
or
Geog 353. Physical Geography
Geog 471. Western Europe and the Mediterranean
or
Geog 472. USSR and Eastern Europe
or
Geog 475. Geography of the Developing World/ East Asia and Latin America
Geog 491. Seminar on Basis of Geographic Thought and Research

Three additional course units in geography or offerings related to cadet's area of concentration with approval of faculty advisor
One open option

History Major

Administered by the Department of History

The History major helps cadets understand the world and its problems by studying the ideas and forces of the past that have shaped the present. The knowledge

imparted and the perspective developed are important to the education of the professional Air Force officer and are particularly valuable for cadets contemplating careers in operations, plans, attache duty, and intelligence. Because the major emphasizes the development of historical judgment, research techniques, writing skills, and critical thinking, it is excellent management and leadership training for junior officers aspiring to future staff and command positions.

"Those who cannot remember the past are condemned to repeat it."
George Santayana

In addition to the core curriculum, the following courses are required for the major:

History 330. Historical Methods
One U.S. History option
One European History option
One Military History/Area History option
Two open options
Five course units approved by the advisor in one of the following: Military History; General History; American History; Area History with a concentration in Europe, the Far East, Latin America, the Middle East, or Eastern Europe (Russia)

Humanities Major

Administered by the Humanities Division

The Humanities major introduces cadets to the study of ideas, sharpens their writing and speaking skills, and develops in them an appreciation for the importance of language, a sensitivity to philosophical inquiry and ethical conduct, and an understanding of the important roles played by literature and the fine arts in the development of the whole-person. Thus the major provides excellent leadership training for any future Air Force officer, to include those cadets contemplating careers in flying, weapons control, missiles, maintenance, logistics, law and intelligence--in short, all those fields which demand leadership capable of dealing with the human and technological complexities of an Air Force fast approaching the twenty-first century.

"We judge ourselves by what we feel capable of doing, while others judge us by what we have already done."
Longfellow

In addition to the core curriculum, the major requires the following courses:

One course unit in English from the Department of English
One course unit in history from the Department of History
One course unit in philosophy from the Department of Philosophy and Fine Arts
One course unit in fine arts from the Department of Philosophy and Fine Arts
One course unit in foreign language or humanities from the Department of Foreign Languages

Two humanities division options; one academic divisional option; one open option

International Affairs Major

Administered by the Department of Political Science

The major in International Affairs is designed to develop Air Force officers with a comprehensive understanding of contemporary political problems and issues. Courses in the major form the basis for Air Force duties across a broad range of fields allowing the officer to be a generalist while also pursuing assignments requiring skills in research and analysis. This major is particularly suited for those cadets who desire to develop careers in operations, plans, intelligence, politico-military affairs, the law, attache duty, and foreign military assistance. Officers in these career fields normally occupy staff and command positions with the Air Force; in Unified, Specified and Combined Commands; in the Joint Staff; and in the Department of Defense.

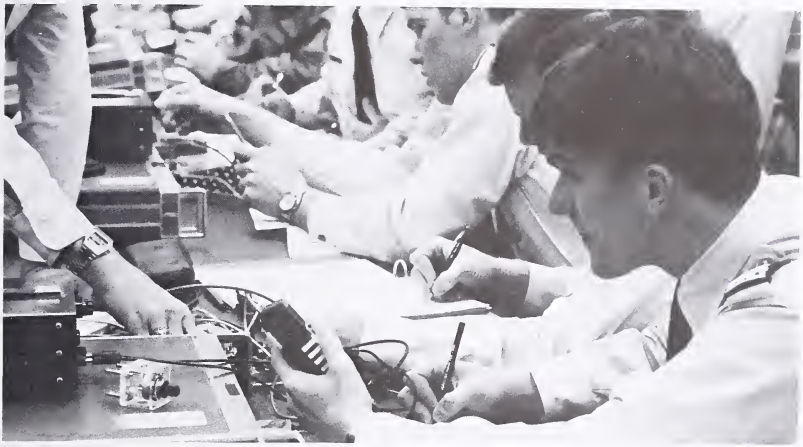
In addition to the core curriculum, the following courses are required for the major:

Pol Sci 232. Comparative Politics
Pol Sci 349. Political Analysis
Pol Sci 352. Political Theory
Six course units approved by the advisor in one of the following areas of concentration: International Politics; Western European, Asian, Latin American, Soviet, Middle Eastern, or African Studies; National Security Policy; or American Politics
One academic divisional option; one open option

Mgt 446. Organization Theory
Mgt 472. Administrative Policy and Strategy
or
Mgt 499. Undergraduate Thesis in Management
Four course units related to management with approval of faculty advisor
Open option

Mathematical Sciences Major

Administered by the Department of Mathematical Sciences



"Education makes people easy to lead, but difficult to drive; easy to govern, but impossible to endure."
Starnes

Management Major

Administered by the Department of Management

The major in Management produces a critical thinker, equipped with both the cognitive and noncognitive skills that enable the cadet to operate effectively as an Air Force officer and manager. Decision making is the focal process and a primary objective is to enhance the cadet's ability to integrate knowledge and proact creatively and sensitively under conditions of ambiguity, risk, and stress.

In addition to the core curriculum, the following courses are required for the major:

Mgt 331. Statistical Decisions in Management
Mgt 341. Fundamentals of Accounting
Mgt 360. Introduction to Management Science
Mgt 361. Management of Human Resources

The major in Mathematical Sciences provides a thorough background in the techniques of analyzing and solving the complex operations, management, and mathematical problems of today's modern Air Force. Courses in operations research, applied mathematics, and analysis provide depth of education in these basic areas. Mathematical applications are stressed through elective courses in other disciplines. The program provides excellent preparation and flexibility of choice for entering Air Force Institute of Technology (AFIT) graduate degree programs in engineering, operations research, the physical sciences, and mathematics.

In addition to the core curriculum, the following courses are required (Math 357 may be substituted for Math 220 in the core):

Math 320. Foundations of Mathematics
Math 360. Linear Algebra

or
Math 365. Modern Algebra
Math 366. Advanced Calculus I
Four math options
Two math options and two open options
or
Four applied options
(All options require math advisor approval)

Econ 466. Seminar in Econometrics
Mgt 472. Administrative Policy and Strategy
or
Mgt 485. Systems Acquisition Management
Math 357. Probability with Statistics
Math 358. Statistics
Math 360. Linear Algebra

"Ability is of little account without opportunity."
Napoleon

Operations Research Major

Administered jointly by Computer Science, Economics, Management, and Mathematical Sciences Departments

The major in Operations Research provides the academic background necessary for duty as an Air Force scientific analyst, as well as for graduate studies in operations research and systems analysis. This interdisciplinary program will appeal to the student who enjoys problem solving and decision making and who wishes to prepare to analyze the complex issues in operations, plans, research, and system development so prevalent in today's Air Force.

In addition to the core curriculum, the following courses are required (Math 357 will be substituted for Math 220 in the core):

Comp Sci 362. Computer Simulation
Econ 465. Introduction to Econometrics

The following three courses:

Math 371. Operations Research I
Math 441. Linear Programming
Math 442. Operations Research II

or the following three courses:

Mgt 360. Introduction to Management Science
Mgt 460. Management Science I
Mgt 462. Management Science II
Capstone OR/MS Option - One course from a list of Capstone options
(An open option must be taken if Math 357 is substituted for Math 220)
One open option

Physics Major

Administered by the Department of Physics

The major in Physics concentrates on basic physical principles and mathematics. It

provides an excellent academic background for a wide range of technical assignments within the Air Force, particularly in the field of research and development. It also provides a sound basis for graduate work in physics, space science, related applied sciences, and a wide variety of engineering science disciplines. The major is divided into three areas of emphasis: physics, space physics, and engineering physics.

In addition to the core curriculum, with Physics 363 as a substitute for Physics 411, the following courses are required for the major:

Math 351.	Applied Differential Equations
Physics 357.	Classical Mechanics I
Physics 358.	Classical Mechanics II
Physics 364.	Introduction to Modern Physics II
Physics 441.	Laboratory Techniques
Physics 461.	Electromagnetic Theory

and the courses listed under one of the three areas below:

1. *Physics*

Math Option.	Course units offered by the Department of Mathematical Sciences
Physics 442.	Advanced Physics Lab
Physics 459.	Quantum Mechanics
Physics 462.	Electromagnetic Theory II
Physics 465.	Statistical Physics

2. *Space Physics*

Math Option
Physics 370. Introduction to Space Physics
Physics 392. Plasma Physics
Two Space Physics electives from the following: Astro 451, Physics 380, 453, 454, or 486

3. *Engineering Physics*

Math 455. Advanced Engineering Mathematics
An approved four-course design sequence in engineering or a related science.

Social Sciences Major

Administered by the Social Sciences Division

The major in Social Sciences is designed for the cadet whose interests and abilities lie in the area of the social sciences but who prefers a broader background than a major in only one discipline would provide. The major requires completion of at least one course, as indicated below, beyond the core in each of the following disciplines: economics, geography, management, political science, law, and behavioral science. More concentrated study in one discipline may be attained through the use of academic divisional options.

In addition to the core curriculum, the following courses are required for the major:

One Economics course from the following options:

Econ 333.	Price Theory
Econ 351.	Comparative Economic Systems
Econ 356.	Macroeconomic Theory
Econ 374.	Survey of International Economic Issues
Geog 320.	Principles of Geography

One Management course from the following options:

Mgt 341.	Fundamentals of Accounting
Mgt 360.	Introduction to Management Sciences
Mgt 361.	Management of Human Resources
Mgt 446.	Organization Theory

One course unit in political science
One course unit in law
One course unit in behavioral science
Two social science options
One open option

"An Air Force Academy education provides a broad foundation of knowledge upon which an officer will continue to build throughout a career of service, and couples this with an area of some specialization. The core curriculum coupled with an academic major prepares graduates to be both career Air Force officers and well-informed citizens."
Brig Gen William A. Orth

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SQUADRON 31
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SQUADRON 22
2

ATHLETIC PROGRAM

The athletic program, administered by the Director of Athletics, makes a vital contribution to your preparation for Air Force leadership. Through your participation in all phases of athletics you will develop:

* Such attributes as skill, confidence, initiative, and teamwork;
* Useful habits of physical fitness and conditioning;
* Courage, self-control, and the ability to survive in emergencies;
* Athletic skills to compete in a variety of sports;
* Individual skills for enjoyment of sports after graduation.

Professional physical educators conduct instructional classes during each fall and spring semester. Instruction is geared to improve your physical fitness, aquatic skills and combative confidence. You will participate in many types of activities through intramural contests. You may compete for nationally recognized intercollegiate teams in a variety of varsity sports.

The Academy's athletic facilities are among the finest in the nation. The Cadet Gymnasium has three full-sized gyms; one Olympic swimming pool and another 40-yard pool; courts for squash, handball, tennis, volleyball and basketball; and a rifle and pistol range. The Field House has an ice rink, a basketball court with seating for 6,600 spectators, and an indoor Tartan track with Astro-turf infield for all-weather practice. There are also 143 acres of outdoor playing fields and two 18-hole golf courses.

The facilities have been used for National Sports Festivals, Special Olympics, Colorado High School Easter Races and Summer Sports Camps at times that do not interfere with cadet training.

"Let us build up physical fitness for the sake of the soul."
Attributed to Plato

PHYSICAL EDUCATION INSTRUCTION

You will attend mostly coeducational classes with separate training in some combative courses. Each year you will select one of the following elective subcourses: advanced golf, advanced tennis, basic ice skating, badminton, racquetball, strength training, basketball, handball, scuba I and II, squash, instructor training, pistol marksmanship, aerobic dance, fencing, bowling, running techniques or water polo. If you do not meet the minimum aquatic standards you will continue to receive additional swimming instruction instead of an elective option.

Fourthclass Year

Cadets undergo a vigorous training program designed to develop physical strength, endurance, flexibility and motor performance. Everyone takes a physical fitness test and a swimming test. If you do not meet the minimum requirements, you will attend remedial instruction. (You should learn to swim before entering the Academy. A distance of 500 feet in five minutes should be a minimum goal.) The summer training includes a progressive series of conditioning exercises and runs, sports activities, and an intersquadron field day. This training prepares you for the strenuous physical education and intramural requirements of the approaching academic year.

"It is not a matter of strength but a matter of will."
Victor Hugo

During the fall and spring semesters, the curriculum stresses motor performance, self-confidence and upper-body strength. Women receive instruction in physical development while the men take boxing. All cadets have classes in gymnastics and swimming.

Thirdclass Year

During the last three years at the Academy, the physical education program is weighted with combative courses and lifetime skills to enhance fitness and recreation. All cadets receive instruction in tennis and wrestling and an introduction to racquet sports.

Secondclass Year

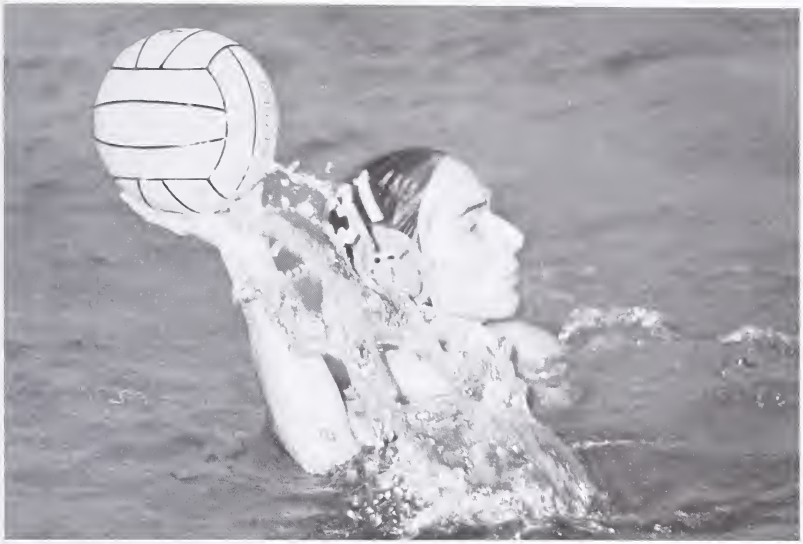
Combative instruction in judo emphasizes aggressiveness, self-confidence and body development. A water survival course further enhances your aquatic skills and self-confidence. During this course you will experience several simulated aquatic disasters and emergencies which you might encounter as an Air Force officer. You will take a course in basic golf to round out the secondclass-year program.

Firstclass Year

Volleyball and physical fitness methods courses continue the progressive development of lifetime activities and physical conditioning. You will complete the self-defense instruction through a multitute of hand-to-hand combative situations in an unarmed combat course.

INTRAMURALS

Intramurals are a vital part of the prescribed physical education program and the cadet way of life. All cadets not engaged in intercollegiate athletics or authorized clubs must participate in intramurals. Each of the 40 cadet squadrons field a team in all 18 intramural sports played during the fall, winter and spring seasons. The squadron with the best intramural record at the end of the school year receives the coveted Malanophy trophy. You will develop physically while gaining experience in both team and individual sports during intramural competition. Cadets expand leadership potential by constructing detailed administrative plans, coaching, and officiating--in effect, managing the entire 720-team intramural program. With the exception of a few contact sports, women cadets participate on a coeducational basis in each sport, competing against other men and women cadets. In addition to the seasonal sports, Wing Open Championships are held



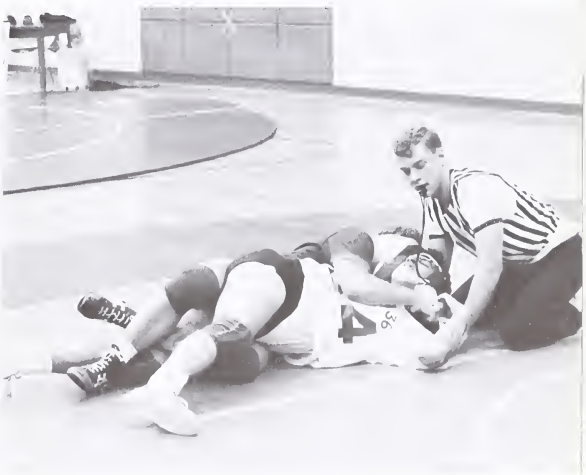
"On the fields of friendly strife are sown the seeds that on other days and other fields will bear the fruits of victory."
Gen Douglas MacArthur

each spring in boxing, squash, and handball. Many of the championship winners go on to capture national honors.

The intramural sports include:

Fall: tackle football, soccer, softball, tennis, and cross country.
Winter: boxing, wrestling, swimming, handball, basketball, squash, and bowling.
Spring: rugby, volleyball, water polo, team handball, flag football, and racquetball.

"Know thyself."
Cicero

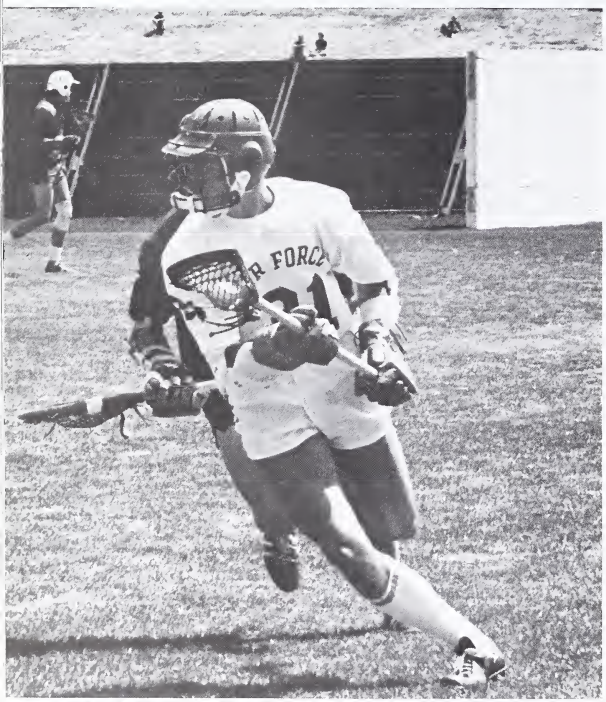


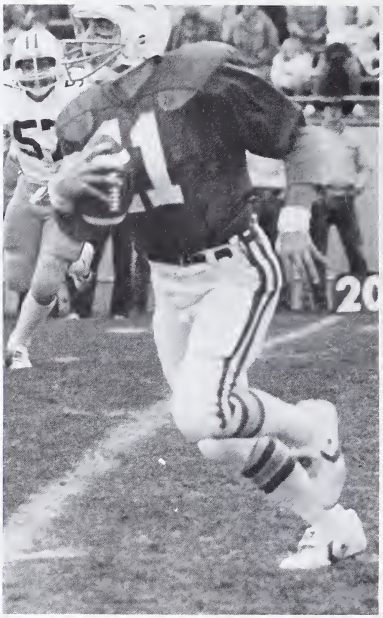
INTERCOLLEGIATE ATHLETICS

"As soon as sacrifice becomes a duty and a necessity to the man, I see no limit to the horizon which opens before me."
Ernest Renan

Athletics play an important role in the molding of America's future Air Force officers. For those cadets with exceptional ability, intercollegiate athletics provide the opportunity to compete against the finest athletes and teams in the nation. This intense level of competition builds a sense of spirit and pride throughout the Cadet Wing.

The intercollegiate program encompasses 28 men's and women's varsity teams competing in over 500 contests each year. The intercollegiate sports include: *Fall* - football, cross country, soccer, water polo, volleyball, golf, tennis; *Winter* - basketball, fencing, gymnastics, swimming, wrestling, ice hockey, indoor track, rifle, pistol; and *Spring* - baseball, golf, tennis, track, lacrosse.





Both men and women cadets compete in tennis, rifle, pistol, track, swimming, cross country, basketball, fencing, golf and gymnastics. Volleyball is played by women only, while football, baseball, soccer, water polo, wrestling, ice hockey and lacrosse are played by men only.

All cadets participating on an individual or team level are recognized for outstanding achievements and are provided the opportunity to represent the Academy in conference championships, post-season bowl games, and tournaments and NCAA championships. Participation in such events reflects the competitive leadership traits desired in future military officers. During its relatively short period of existence, Academy athletes have achieved numerous national honors. To date, 206 cadets have been selected for All-America honors for a total of 384 awards, and 23 cadets have won NCAA postgraduate scholarships.

Home football games are played in Falcon Stadium located on the grounds of the Air Force Academy. Carved into the foothills of the Rampart Range of the Rocky Mountains, Falcon Stadium was constructed

after the Air Force Academy Foundation, an organization of national civic leaders, raised the necessary funds to build the 47,000 seat arena.

Cadet participation in intercollegiate competition is financed primarily from sales of tickets to football, basketball, and ice hockey games. Funds are managed and administered by the Air Force Academy Athletic Association, a self-supporting, nonappropriated funded instrumentality within the Athletic Department.

"The harder you work, the harder it is to surrender."
Vince Lombardi

In 1980, the Academy became the ninth member of the Western Athletic Conference. Conference rivalries and yearly contests against Army, Navy, and Notre Dame provide an exciting, highly competitive football season. The 1983 football schedule is as follows:

Home Games

Sep 10	Texas Tech
Sep 24	Brigham Young
Oct 15	Texas, El Paso
Oct 22	Utah
Oct 29	Army
Nov 5	Hawaii

Away Games

Sep 3	Colorado State
Sep 17	Wyoming
Oct 1	San Diego State
Oct 8	Navy
Nov 19	Notre Dame

"Athletics exemplifies what the Academy is all about: teaching cadets to be winners...and warriors."
Col John J. Clune

ADMISSIONS PROGRAM

PREPARATION GUIDANCE

The high admissions standards, the fierce competition for appointments, and the demands placed on cadets at the Academy require thorough preparation if you plan to accept the Academy's challenge. It takes a well-rounded program of leadership, academic, and athletic preparation if you are going to be one of the few who can meet the Academy's challenge.

Academic Preparation

Since a large portion of your academic composite is input from the ACT or SAT, you should plan to take these tests several times to ensure the highest possible score. Each of these tests has a slightly different emphasis, so it is advisable to take both tests to see which one measures your educational background most favorably.

To best prepare yourself for the ACT and SAT, enhance your prior academic record, and prepare yourself for the academic challenges of the Academy, a proper high school education is a necessity. Four years of English, including a college preparatory course in writing, and four years of math, with a strong background in algebra, trigonometry, functional analysis and analytic geometry, will prepare you for the ACT and SAT and the academic expectations of the Academy.

Academics at the Academy are oriented toward the sciences. Any basic science courses you can take during high school will enhance your chance of success in the Academy's academic program. Your science courses should include physics, chemistry, biology, and computer science.

Each cadet is required to take a year of one of the following languages: Arabic, Chinese, French, German, Japanese, Russian, or Spanish. A high school background of two or three years in one of these languages is also recommended.

College credits may be transferred if the Academy offers a corresponding course. Cadets who have taken an advanced placement or college-level high school course, or have acquired extensive knowledge of a subject by some other means, may take an Academy-prepared test to obtain validation credit in that subject. Placement/validation tests are administered to all new cadets in the following subjects: English, foreign language, history, chemistry, and math.

"When you put on uniform, there are certai inhibitions that you accept."
Gen Dwight Eisenhower

Regardless of the number of transfer or validation credits, everyone must enter as a fourthclass cadet and remain at the Academy for four years. Cadets with transfer or validation credits will be able to complete the prescribed curriculum sooner, leaving more

time to pursue a given subject area in depth, or prepare for postgraduate study.

In preparation for the Academy, you should strive for the best grades possible. You should also work toward developing effective study habits and efficient time management since these qualities are essential in meeting the Academy's academic challenge. Knowing how to type will be very helpful also.

Physical Preparation

Physical fitness is an integral part of Academy life. You will be tested on your physical fitness during the admissions process when you take the Candidate Fitness Test (CFT). Additionally, during your Academy experience, and particularly in Basic Cadet Training (BCT), you will encounter intense physical demands.

"No one said it would be easy, but the results are well worth the effort."

To meet these demands, you should participate in individual and team sports throughout high school. Where possible, these should be organized, competitive sports.

In addition, you should participate in an individual fitness program. Upper-body strength, running speed and endurance should be your objectives. If you do not already know how to swim, you should learn. While not required for admission, you must be able to swim at least 500 feet in five minutes to pass the swimming test which is given during your first summer at the Academy.

Leadership Preparation

In the leadership portion of the whole-person composite, you are rated on a variety of athletic and nonathletic activities. Accordingly, you should participate in a variety of extracurricular activities. However, quality of involvement rather than quantity is the key. It is better to demonstrate leadership in a few selected activities rather than being a "joiner" of many.

DEFINITIONS OF TERMS

Prospective Candidate--An individual expressing an interest in attending the Air Force Academy.

Precandidate--An individual who submits a precandidate questionnaire to the Academy.

Applicant--An individual who applies to a Member of Congress or another nominating authority requesting a nomination.

Nomination--The result of naming an

applicant as an Academy candidate by a nominating authority.

Nominee--An applicant who has obtained a nomination in a category authorized by the Director of Cadet Admissions.

Candidate--A legally nominated individual whose name has been recorded by the Director of Cadet Admissions.

Appointment--An offer of admission to a fully qualified candidate.

Appointee--A qualified candidate who has been selected for admission.

Cadet--An appointee who has been admitted to the Academy and has taken the oath of allegiance.

ADMISSIONS PROCESS

Before you can accept the Air Force Academy challenge, you must complete our admissions process. In this process, we select only the best applicants to become cadets.

Eligibility

To qualify for appointment consideration, you must:

- be at least 17 years old.
- not yet have passed your 22nd birthday on July 1 of the year you enter the Academy.
- be a U.S. citizen (allied students authorized admission are exempt from the U.S. citizenship requirement).
- be of high moral character.
- meet high leadership, academic, physical and medical standards.
- be unmarried, with no dependents.
- be pilot qualified or be granted a waiver.

Admissions Criteria

The Air Force Academy evaluates candidates on the basis of numerous academic and nonacademic criteria that are combined to form a "whole-person" score. This composite is broken down into the following academic and leadership segments.

The academic component constitutes a large portion of the whole-person score. Your prior academic record is a major part of this composite. Primary factors are rank in class, grades from high school or preparatory school, and any college courses you might have taken. Honors and advanced placement courses receive extra credit. Your ACT or SAT scores make up the rest of the academic composite, with math counting more heavily than English.

You may compare your test scores with the average scores of candidates appointed to the Academy in a recent class by referring to the following table:

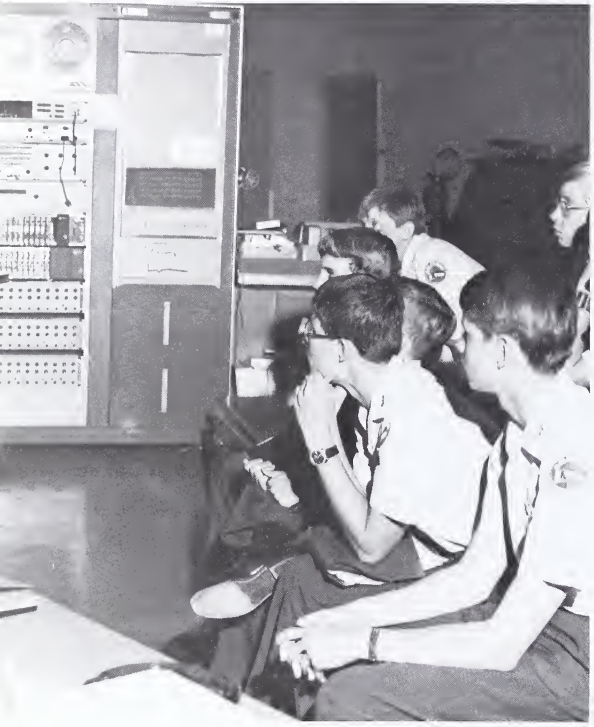
	Minimum	Mean	Maximum
SAT			
Verbal Aptitude	450	557	800
Math Aptitude	500	649	800
ACT			
English	19	24.0	33
Social Studies	*	26.6	36
Mathematics	22	29.3	36
Natural Sciences	*	29.5	35

*No minimum

You may benefit by taking one or both of these testing programs in your high school junior year. Then if you become an Academy candidate you may improve on previous scores by retaking the tests in your senior year.

"The Academy's long-range mission will be to train generals, not second lieutenants."
Gen Hubert Harmon

The leadership component makes up the remainder of the whole-person score. Basically, it measures athletic and nonathletic activities. Some of the athletic indicators are varsity letters earned, all-league or all-state recognition, or selection as team captain. Nonathletic indicators include leadership in a club, participation in student government, involvement in scouting or the Civil Air Patrol, or an after-school job. Your performance on the Candidate Fitness Test (a measure of physical fitness) is also included in the leadership component.



"You will never be a leader unless you first learn to follow and be led."
Tiorio

These criteria assure that the Academy obtains candidates who can manage time and excel in the many aspects of the Academy's challenge.

Precandidate Program

If you believe you meet these requirements, the first step toward becoming a cadet is to request a Precandidate Questionnaire (PCQ) from the Cadet Admissions Office. The Academy uses the PCQ to evaluate the qualifications of prospective candidates, to schedule those who qualify for medical examinations, and to provide information on potential nominees to Members of Congress. To receive your PCQ, send a request to: Cadet Admissions Office, USAF Academy/RRS, Colorado Springs, CO 80840, during the second semester of your junior year.

Nominating Categories

Before you can be accepted into the Academy, the laws governing our admissions process require that you have a nomination. Since the nomination process can be lengthy, you should seek a nomination at the same time you request a PCQ.

Congressional

The Congressional nomination is the primary one for most candidates. You should submit your request for a Congressional nomination directly to your two U.S. Senators and your Representative. You should apply to all three sources in order to maximize your chances of receiving a nomination.

A request for nomination should include the following information: your full name, address, phone number, date and place of birth, social security number, and your father's and mother's names. Also include your high school's name and address, date of graduation, approximate grade average, class standing (if known), scores from the ACT, SAT, and PSAT (if taken), athletic and nonathletic extracurricular activities, and the year you wish to enter the Air Force Academy. Finally, you must include a short summary of your reasons for wanting to attend the Air Force Academy.

To request a nomination from your U.S. Representative, send your request to:

Honorable (your Representative's name)
House of Representatives
Washington, DC 20515

For your Senators, address your request to:

Honorable (your Senator's name)
United States Senate
Washington, DC 20510

No political affiliation is necessary to apply for a nomination. Members of Congress want to nominate outstanding individuals who will have a chance to qualify for an Air Force Academy appointment.

Each Senator and Representative has considerable latitude in awarding nominations. However, most nominations are competitive and are based upon some combination of academic achievement, leadership performance, and athletic participation.

Each Member of Congress may have a maximum of five cadets attending the Academy at any one time. When one of these five cadets graduates or is disenrolled prior to graduation, a vacancy occurs. For each vacancy, the Member of Congress may nominate a maximum of ten candidates. Three methods are available in making these nominations.

The first is the principal/alternate method. The Member of Congress nominates a principal candidate who must, by law, be offered an appointment if he or she fully qualifies by Academy admissions criteria. The remaining nominees are rank ordered according to the Member's preference. If the principal nominee does not qualify, then the appointment must be offered to the highest ranked alternate who does.

The second is the principal/competitive method. Members of Congress who use this method designate a principal nominee as in the principal/alternate method. However, if the principal nominee does not qualify, the appointment is offered to the candidate with the highest whole-person score as determined by the Academy.

The third is the fully competitive method. The candidate with the highest whole-person score is offered the appointment.

Presidential

This category is reserved for children of career military personnel. To qualify, the child's parent must meet one of the following criteria:

1. Be on active duty and have served continuously on active duty for at least eight years.
2. Have retired with pay or have been granted retired or retainer pay.
3. Have died after retired with pay or being granted retired or retainer pay.

Children of Deceased or Disabled Veterans or of Military or Civilian Personnel in a Missing Status

The child of a deceased or disabled member of the Armed Forces is eligible if the parent was killed or 100 percent disabled by wounds or injuries received or diseases contracted in active service or from a pre-existing injury or disease aggravated by active service.

The child of a parent who is in "missing status" is eligible if the parent is a member of the armed services or a civilian employee in active government service who is officially carried or determined to be absent in a status of missing; missing in action; interred in a foreign country; captured, beleaguered, or besieged by a hostile force; or detained in a foreign country against his or her will.

To request a nomination in this category, an individual must submit an application directly to the Cadet Admissions Office between 1 May and 31 January.

Air Force Regular and Reserve Components

Vacancies are available under this category for airmen in the Regular Air Force, Air Force Reserve, and Air National Guard in

"We are all here for a spell, get all the laughs you can."
Will Rogers

accordance with Air Force Regulation 53-10. The application form (AF Form 1786) should be obtained through normal Air Force publications supply channels.

Children of Medal of Honor Recipients

The children of Medal of Honor recipients from any branch of the armed services may apply under this category. The child must meet all the eligibility requirements and be fully qualified to be appointed to the Academy.

Service-Connected

When requesting a service-connected nomination, follow the format described under Congressional nominations. In addition to the information listed there, you must include your rank, regular or reserve component, branch of service, and organizational address if you are a member of the military.

If you qualify because of your parent's military service, you must include the following information on him or her: name, rank, social security number, and component and branch of service. If your parent is active duty, you must attach a statement from his or her current personnel officer specifying all periods of active duty and any breaks therein. If your parent is retired or deceased, attach a copy of retirement orders or casualty report.

Mail your request for any service-connected nomination to the Director of Cadet Admissions, USAF Academy/RRS, Colorado Springs, CO 80840.

Air Force Reserve Officer Training Corps

Five students may be nominated to the Academy every year from each college or university AFROTC unit as well as from each eligible high school with Air Force Junior ROTC. College or university students must submit their applications to the Professor of Aerospace Studies. High school students must submit their applications to the Aerospace Education Instructor.

Honor Military and Naval Schools

Any school designated by the Departments of the Air Force, Army and Navy as an honor school may nominate five candidates from among its honor graduates. Applications are provided by the Academy to eligible schools.

Allied Students

Allied students from the Republic of the Philippines as well as any American Republic may request a nomination to the Academy through an appropriate official of their own government. The request should contain information about the applicant's background.

"Reason and judgment are the qualities of a leader."
Tacitus

Requirements for admission for allied students include qualifying scores on either the ACT or SAT. Additionally, the student must be able to read, write, and speak English.

Allied students who meet the established academic requirements will be awarded a bachelor of science degree. However, they are not commissioned in the United States Air Force.

Other Categories

The same methods of nominating candidates available to Congressmen are also available to the following authorities: Vice President of the United States (he nominates from the U.S. at large), the delegate in Congress from the District of Columbia, the Panama Canal Commission Administrator, the Resident Commissioner and Governor of Puerto Rico, the delegates in Congress from Guam and the U.S. Virgin Islands, and the Governor of American Samoa.

AUTHORIZED STRENGTH of the Air Force Academy Cadet Wing

Congressional legislation provides for an authorized strength of 4,546 cadets. The authorized appointments at maximum strength for each nominating category are shown below. Cumulative appointments are the total number available, of which approximately one-third will enter each year. The other appointments are filled annually.

SOURCE OF NOMINATION	Authorized Appointments (Cumulative)
100 United States Senators (5 each)	500
435 United States Representatives (5 each)	2,175
Vice President	5
District of Columbia	5
Puerto Rico	6
Panama Canal	1
American Samoa	1
Guam	2
Virgin Islands	2
Children of Deceased or Disabled Veterans and Children of Persons in a Missing Status	65
Allied Students	
Republic of the Philippines	4
American Republics	20
	(Annual)
Presidential	100
Regular Components	85
Reserve Components	85
Honor Military and Naval Schools, AFROTC and AFJROTC	20
Children of Medal of Honor Recipients	No Limit
Qualified Alternates	Number needed to fill

Appointee Requirements

Documentary Requirements

"The opportunities here are unparalleled in terms of learning about yourself, enjoying a myriad of experiences, while at the same time having the chance to serve your country."

Social Security Number

You must have a Social Security number prior to admission. If you do not have one, ask for a Treasury Department Form SS-5 at your local Post Office or the Social Security Administration Office.

Transcripts and Activities Record

You must submit your entire secondary school scholastic record as well as transcripts for any preparatory school or college attended. High school students must submit their current rank in class if known. You will be required to submit an activities record outlining your high school extracurricular performance or other activities which indicate leadership potential.

Birth Certificate or Proof of Citizenship

You must submit proof of citizenship if you were foreign born or naturalized. U.S. citizenship is required unless you are applying as an allied student. A candidate who is adopted, claiming eligibility in a nominating category through an adoptive parent, must submit a copy of the court order of adoption. Adoption proceedings must have been initiated before the candidate's fifteenth birthday. A candidate must use his or her name as it appears on the birth certificate on all official records unless legal evidence authorizing a name change has been provided to the Cadet Admissions Office.

Admission Deposit

Each appointee will be requested to deposit $500 at the time of entry to the Academy. The deposit will be collected during initial processing. The amount will be credited to your cadet pay account and will be used to help defray the cost of uniforms and other personal expenses that will be incurred

immediately after entry. The deposit should be made in the form of a personal check, cashier's check or money order, with your name on it, made payable to the Accounting and Finance Officer, USAF Academy, Colorado Springs, CO 80840.

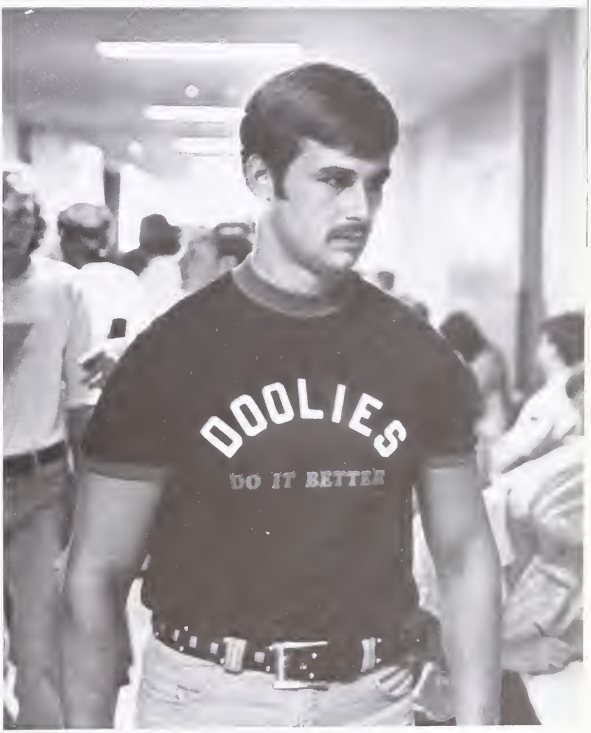
The $500 entrance deposit is supplemented by an advance authorized by the Secretary of the Air Force not to exceed $1200 to each cadet upon admission to the Academy. The advance must be repaid during the time you are in training. The repayment is accomplished by recouping from your monthly pay until the advance is repaid.

Cadets who are involuntarily separated from the Academy prior to repayment of the advance will have all excess pay and allowances applied against the indebtedness. If the indebtedness is not satisfied by such application of funds, cadets are permitted to turn in enough clothing and equipment of a distinctive military nature to liquidate the remaining balance. Cadets who are voluntarily separated for their own convenience can turn in certain unused and unaltered uniform and equipment items for monetary credit. Cadets who are voluntarily separated must satisfy any indebtedness that remains after such monetary credit is extended.

Travel Expenses

Appointees will receive instructions concerning reimbursement for travel to the Academy. Travel allowances will be credited to your personal checking account. Appointees who refuse to take the Oath of Allegiance upon arrival at the Academy, or appointees who are disqualified for admission because of some fault of their own, will **not** be entitled to any travel allowances.

"Showing up is 80 percent of life."
Woody Allen



SERVICE OBLIGATIONS

The service obligations apply to all cadets except allied students from foreign nations.

Oath of Allegiance

When you process into the Academy, you will be asked to take the Oath of Allegiance:

> "I, (name), having been appointed an Air Force cadet in the United States Air Force, do solemnly swear (or affirm) that I will support and defend the Constitution of the United States against all enemies, foreign and domestic; that I will bear true faith and allegiance to the same; that I take this obligation freely, without any mental reservation or purpose of evasion; and that I will well and faithfully discharge the duties of the office on which I am about to enter. So Help Me God."

Service Agreement

Before you take the oath, you will be required to sign an agreement, with the consent of your parents or guardian if you are a minor, that you will fulfill the following service obligations:

"When you get something for nothing you just haven't been billed for it yet."
Franklin James

* Complete the course of instruction at the Academy (unless you are disenrolled by proper authority).

* Accept an appointment and serve as a commissioned officer in the Regular Air Force for five years after graduation.

* If authorized to resign from the Regular component before the sixth anniversary of your graduation, serve as an officer in the Reserve component until the sixth anniversary.

Service Understanding

You will be required to sign a Statement of Understanding which involves the following conditions set forth in Title 10 of the U.S. Code:

* A cadet who enters the Academy from the Regular or Reserve component of any service, if discharged from the Academy prior to graduation, will normally revert to former rank and branch of service for the completion of or the remaining period of obligated service.

* A cadet who enters the Academy from civilian life will assume a six-year legal obligation to serve in the Air Force, either active or reserve. If discharged from the Academy prior to graduation, the person will be subject to current Air Force policy.

Discharge Policy

The policy requiring discharged cadets to serve in the Air Force may vary, depending on manpower needs of the Department of Defense. The current Air Force policy is as follows:

* Fourth- and thirdclass cadets who are separated by the Academy or whose resignations are accepted will ordinarily be completely relieved from all military duty, active or reserve.

* Second- and firstclass cadets who are separated by the Academy or whose resignations are accepted will normally incur

an active duty service commitment of not more than four years. Exceptions will be made for humanitarian reasons and those few cases in which it is not in the best interest of the Air Force to call a cadet to active duty because of physical disqualification, misconduct or demonstrated unsuitability for military service in an enlisted status. Those incurring the commitment will normally be transferred to the Air Force Reserve and ordered to active duty in enlisted airman status. Secondclass cadets who are disenrolled or resign on or after the first day of academics in the fall semester of the secondclass year will incur a two-year active duty service commitment. Firstclass cadets who are disenrolled or resign on or after the first day of academics in the fall semester but before completion of the spring semester will incur a three-year active duty service commitment. Firstclass cadets who complete the entire academic program and resign or refuse to accept a commission may be ordered to active duty for four years.

* Cadets who fail to complete any period of active duty may incur a liability to reimburse the U.S. Government for an appropriate proportion of the cost of their Academy education.

Resignation Policy

A cadet who submits a request to resign will be required to state a specific reason for the action. The cadet will be counseled to determine if his or her problem can be resolved prior to action being taken to process the resignation.

MEDICAL EXAMINATION REQUIREMENTS

An individual's medical qualification for appointment to the service academies is determined through one general standardized examination used by all academies and commissioning sources. Examinations are conducted at designated examining centers located throughout the United States and at some overseas bases. The qualifying examination must be taken on or after 1 June of the year preceding the year of admission. Therefore, prior candidates who are

reapplying must reaccomplish portions of the medical examination.

The examining facility will not make a determination of the candidate's qualification for admission. Examination results will be forwarded for review by the Department of Defense Medical Examination Review Board (DODMERB). Its final determination regarding medical qualification will be furnished to the individual and the Academy.

Before taking the qualifying medical examination, Academy applicants should review their past and present medical history with the assistance of their parents and family physician. The medical history must be compiled by the examining facility with particular care and full elaboration of details. Complete documentation of all illnesses,

injuries, and operations is absolutely necessary. The applicant may avoid delay in evaluation of the medical qualification by obtaining statements from the attending physician or from hospital records concerning any past or present medical care and presenting them to the examining facility when reporting for the examination.

Applicants are encouraged to undergo a thorough dental examination by their private dentist. All decay revealed visually or by X-ray should be filled at the applicant's expense before taking the qualifying medical examination. Final qualification will be

delayed pending certification that treatment has been completed.

Applicants who wear contact lenses must remove them a minimum of 21 days prior to the medical examination.

Women will be required to have a pelvic examination and a Pap test which may be completed by their family physician.

Questions concerning a candidate's medical qualification must be referred to the Director of Air Force Standards, DODMERB, U.S. Academy, Colorado Springs, CO 80840.

Medical History

The following list of medical conditions is a guide for review by applicants and their parents in recalling their full medical history. The list is not all-inclusive, and it should not be taken as a guide to all conditions which may or may not be disqualifying for admission. Each case is evaluated individually within established standards.

Rheumatic fever; swollen or painful joints; bone, joint or other deformity; painful or "trick" or locked knee; arthritis or rheumatism; sickle cell disease.

Frequent or severe headaches; dizziness or fainting spells; ear, nose or throat trouble; sinusitis, hay fever, or asthma; frequent or painful urination; kidney stone or blood in urine; sugar or albumin in urine; bed-wetting; shortness of breath; pain or pressure in chest; palpitation or pounding heart; high or low blood pressure.

History of any surgical procedure; frequent indigestion; stomach, liver or intestinal trouble; gall bladder trouble or gall stones; stuttering or stammering; frequent trouble sleeping; sleepwalking; frequent or terrifying nightmares; depression or excessive worry; nervous trouble; head injuries with or without unconsciousness; loss of memory or amnesia; epilepsy or any type of seizures; tuberculosis; jaundice; goiter, tumor, growth, cyst, or cancer.

Carious teeth, defective restorations, defective prosthesis, until corrected. Severe malocclusion or malrelation of the jaws. Orthodontic appliances in place for continued treatment (*retainer appliances are permissable if all orthodontic treatment is completed*). Any dental defect that interferes with clear speech.

Visual Requirements

In reviewing the medical standards at the end of this chapter, you will notice that the visual requirements for pilot qualification are very high, while the requirements for those granted waivers to pilot qualification are somewhat less restrictive. Excessive refractive errors present the most significant problems in meeting the pilot or navigator qualifications. A candidate's visual qualifications are initially evaluated on the medical examination. After entering the Academy, a cadet's vision will be evaluated

periodically by the Eye Clinic, and visual care and counseling will be provided.

The development of nearsightedness commonly occurs in the late teenage years. Therefore, some cadets who meet the visual qualifications to pursue a flying career upon admission will not meet the same qualifications at graduation. Candidate's should keep in mind that this situation can occur in order to minimize the feeling of discouragement if they are not physically qualified for pilot/navigator assignment at the time of graduation. No measures have proven to be effective for permanently impeding the progression of nearsightedness. Radial keratatomy and similar surgical alterations to the cornea are experimental operations for myopia (nearsightedness) and will disqualify an individual for flying training. The wearing of contact lenses by Air Force personnel on flying status is prohibited.

MEDICAL STANDARDS

All candidates admitted to the Air Force Academy must meet the established standards for pilot training unless they are granted a waiver by the Academy Board. Those receiving waivers may qualify for navigator training but, in all cases, must meet the medical standards for commission in the United States Air Force at the time of graduation. Flight qualification requires color vision. Each applicant's report of medical examination is evaluated carefully on an individual basis, and no list of standards can cover all cases. However, those standards which apply to the greatest number of applicants are outlined below.

Pilot

Visual Acuity

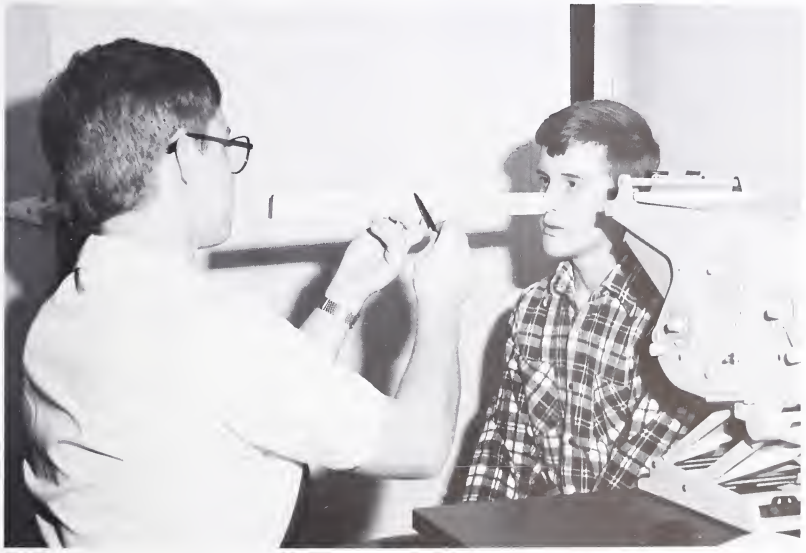
Distant: 20/20 or better uncorrected in each eye. Near: 20/20 or better uncorrected in each eye.

Refractive Error

Farsightedness (hyperopia) no greater than +1.75 diopters and nearsightedness (myopia) no less than plano (0.00 diopters) in any one meridian, and the astigmatic error must not exceed 0.75 diopters.

Hearing

Maximum hearing loss in each ear cannot



be greater than as follows (ANSI Standards 1969):

Frequency	500	1000	2000	3000	4000	6000
Loss	25	25	25	*	*	*

*No more than a total of 270 decibel loss for the top three frequencies for both ears.

Standing Height

64 inches minimum to 76 inches maximum.

Sitting Height

34 inches minimum to 39 inches maximum, measured while sitting erect, the distance from top of head to chair seat.

Weight

See the chart below.

Navigator

Visual Acuity

Distant: 20/70 or better uncorrected in each eye, correctable with ordinary glasses to 20/20 in each eye. Near: 20/20 or better uncorrected in each eye.

Refractive Error

Farsightedness (hyperopia) no greater than +3.00 diopters and nearsightedness (myopia) no greater than -1.50 diopters in any one meridian, and the astigmatic error must not exceed 2.00 diopters.

Height, Weight, Hearing

Same as pilot standards.

Commission

Visual Acuity

Distant: correctable to 20/40 in one eye and 20/70 in the other, or 20/30 in one eye and 20/100 in the other, or 20/20 in one eye and 20/400 in the other. Near: correctable to 20/20 (J-1) in one eye and 20/30 (J-4) in the other.

Refractive Error

In spherical equivalent of not more than +8.00 or -8.00 diopters.

Standing Height

60 inches minimum to 80 inches maximum.

Weight

See the chart below.

Hearing

Same as pilot standards.

Commission Height-Weight Standards

The weight standards below ordinarily will not be waived. However, exception to the standards may be granted if a generally large bone structure and large, well-proportioned muscle masses without evidence of thick fat layers account for the excess weight. Obesity is disqualifying.

MEN			WOMEN		
HEIGHT	WEIGHT		HEIGHT	WEIGHT	
Inches	Minimum	Maximum	Inches	Minimum	Maximum
60	100	153	60	92	130
61	102	155	61	95	132
62	103	158	62	97	134
63	105	164	63	100	136
64	105	169	64	103	139
65	106	169	65	106	144
66	107	174	66	108	148
67	111	179	67	111	152
68	115	184	68	114	156
69	119	189	69	117	161
70	123	194	70	119	165
71	127	199	71	122	169
72	131	205	72	125	174
73	135	211	73	128	179
74	139	218	74	130	185
75	143	224	75	133	190
76	147	230	76	136	196
77	151	236	77	139	201
78	153	242	78	141	206
79	157	248	79	144	211
80	161	254	80	147	216

CANDIDATE FITNESS TEST

The Candidate Fitness Test (CFT) consists of exercises designed to measure coordination, strength, endurance, speed, and agility. You will be scheduled for a CFT only if an evaluation of your precandidate questionnaire indicates that you meet the minimum qualifications for admission and you have received a nomination. You will be scheduled to take the CFT at an examining center as close as possible to your home. If you practice the following items, you should be prepared for the test. Failure to attain a satisfactory score disqualifies you for admission.

Situps

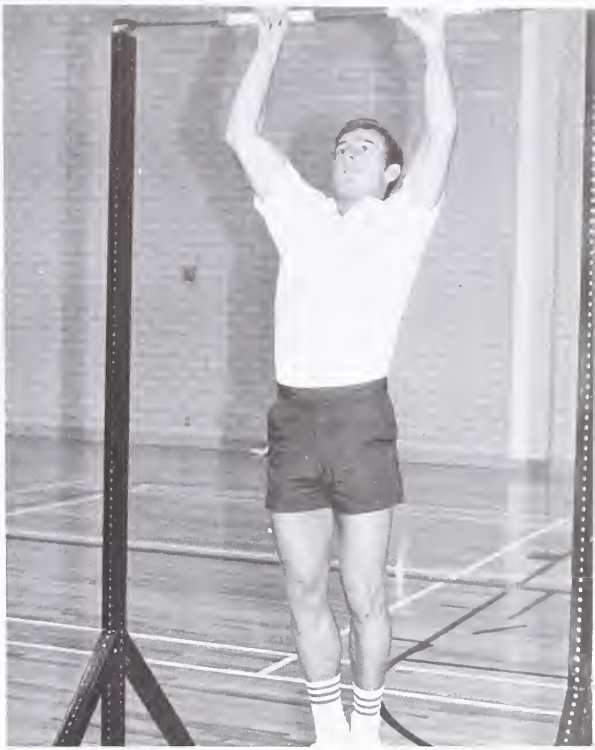
From a position lying flat on your back, legs flexed, feet comfortably apart and held, place your hands on the back of your head with your fingers interlocked. Sit up and touch your elbow to your opposite knee and return to the starting position. Alternate which knee you touch with the opposite elbow on successive situps. There is a two-minute time limit.

Pushups

Start from a position lying face downward, with your hands on the floor directly under the outside points of your shoulders. Raise your body by straightening your arms, keeping your body straight from your shoulders to your heels. Lower your body until your chest touches the floor. No resting is allowed, and there is a two-minute time limit.

Pullups

From a momentary hang position on a horizontal bar, palms away from your face, elevate your body until your chin is above the bar. Return to the straightarm hang position and repeat as many times as possible.



"The world belongs to the energetic."
Ralph W. Emerson

300-Yard Shuttle Run

Run six round trips between two turning lines, 25 yards apart, in the shortest time possible. You must stay within a five-foot wide lane.

Below are the CFT scores for men and women candidates:

EXERCISE	MEN		WOMEN	
	Minimum	Average	Minimum	Average
Pullups	1	11	1	4
Situps (2 minutes)	1	72	1	73
Pushups (2 minutes)	1	47	1	26
300-Yard Shuttle Run	64.7 sec	59 sec	78.6 sec	68 sec

THE ACADEMY PREPARATORY SCHOOL

The Air Force Academy Preparatory School is located on the Academy grounds, approximately five miles south of the main cadet area. The Preparatory School gives eligible Air Force enlisted men and women and selected applicants who were not offered Academy appointments the opportunity to improve their whole-person score before reapplying. Students must be at least 17 and not yet 21 years old as of July 1 of the year they enter the Preparatory School.

The Preparatory School's curriculum is divided into five areas: English, math, chemistry, military training, and athletics. This preparation enhances your chances of receiving an appointment to the Academy the following year. However, completion of the Preparatory School program does not guarantee you will become a cadet.

Enlisted members of the Regular Air Force and Reserve components who wish to apply to the Preparatory School should consult Air Force Regulation 53-14. You must submit an Air Force Form 1786 through your unit commander and CBPO.

Civilian candidates for the Preparatory School are automatically selected from among those individuals who applied to the Air Force Academy but did not receive appointments. Candidates selected are those whose records indicate outstanding potential for the Academy, but who need additional academic preparation to improve their chances for admission.

PREPARATORY SCHOLARSHIPS

Three nonprofit agencies, the Falcon Foundation, the Gertrude Skelly Trust, and the General Henry H. Arnold Educational Fund, provide educational assistance programs to enable deserving candidates to better qualify for admission to the Academy.

The Falcon Foundation awards scholarships to highly motivated and qualified candidates through specific civilian preparatory schools in various parts of the nation. Send your requests for applications and additional information to: The Falcon Foundation, 2375 North Academy Boulevard, Colorado Springs, CO 80909.

Children, adopted children, or stepchildren of active, retired, or deceased career members of the United States Armed Forces may apply for Gertrude Skelly Trust scholarships. Write to the Gertrude Skelly Trust Fund, P.O. Box 1349, Tulsa, OK 74101 for applications and additional information.

The General Henry H. Arnold Educational Fund provides educational assistance to children of Air Force personnel. Applicants may make their own choice of an accredited preparatory school or college. Request your application blank from: Director, Air Force Aid Society, National Headquarters, Washington, DC 20333.

LIAISON OFFICERS

Throughout the admissions process the Academy provides you with any assistance you might need through Admissions Liaison Officers (LOs). The majority of these LOs are Air Force officers, either Reserve, Air National Guard, retired or active duty. LOs keep informed about the Academy and the admissions process through frequent contact with the Academy. These officers are qualified to assist you on all aspects of admission and many phases of the Academy's education and training. They can also tell you firsthand what being an officer will be like after you graduate.

If you become a qualified candidate, you will be required to meet with your LO as part of the admissions process.

You may be able to obtain your LO's name and address from your guidance counselor. If not, you may request this information from the Liaison Officer Coordinator (LOC) on the following list who lives closest to you. LOCs supervise LOs. Anyone interested in receiving counseling assistance who does not know the name of the local LO should write or call the nearest LOC.

Alabama

Lt Col Henry W. Papa
3806 Ashley Dr
Mobile AL 36608
Ph: 205-342-7643

Alaska

Col Stowell R. Johnstone
3921 James Drive
Anchorage AK 99504
Ph: 907-333-9561

Arizona

Maj Roy P. Miller
1529 W. Virginia Ave
Phoenix AZ 85007
Ph: 602-254-1221

Arkansas

Maj Gary W. Jackson
4 Timber Trails
Rogers AR 72755
Ph: 501-636-6827

California

Lt Col Edward R. Collins
12338 Reata Court
San Diego CA 92128
Ph: 619-231-5464

Lt Col John W. Garten
1220 El Dorado
Placentia CA 92670
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Maj Thomas H. McCorkill
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Visalia CA 93277
Ph: 209-733-0744

Lt Col Roy C. Eckard
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Los Angeles CA 90065
Ph: 213-257-7228

Col Walter G. Jennings
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Canoga Park CA 91307
Ph: 213-347-5292

Col Caesar A. Ricci
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Sunnymead CA 92388
Ph: 714-656-1179

Col William E. Sproul
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Roseville CA 95678
Ph: 916-791-4033

Col Ronald L. Stanton
575 Hampshire Rd 114A
Westlake Village CA 91361
Ph: 805-496-9732

Lt Col John H. Ellison
1359 Sydney Dr
Sunnyvale CA 94087
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Monument CO 80132
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Maj Robert J. Powers
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Connecticut

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West Hartford CT 06107
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Delaware

Maj John T. Reardon
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Maj Wayne G. Brown
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APO NY 09286

United Kingdom

Maj Kerry M. Kelly
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FPO New York 09510
Ph: 09-902-2739

Pacific

Maj Don Sexton
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Wheeler AFB HI 76786
Ph: 808-624-4633

Panama

Maj George Weedin
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APO Miami CZ 34002
Ph: 085-3804

HQ USAFA/RRS
UNITED STATES AIR FORCE ACADEMY
COLORADO SPRINGS, CO 80840-7400

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UNITED STATES AIR FORCE ACADEMY
COLORADO SPRINGS, CO 80840-7400

C *Please Print*

LAST NAME FIRST NAME MIDDLE NAME

I am interested in attending the Air Force Academy and would like to receive information about the Academy and a Precandidate Questionnaire.

PRIVACY ACT OF 1974 STATEMENT: The Air Force Academy needs this personal data to provide you information about the AF Academy. The data will be used for Air Force Academy Recruiting. (*Authority 10 USC 503 and E.O. 9397).* Disclosure is voluntary. However, without submission of all the requested information, eligibility for selection cannot be made. The SSAN will be used as a means of identification.

NUMBER AND STREET

CITY STATE ZIP CODE

DATE OF BIRTH: MONTH DAY YEAR

CONGRESSIONAL DISTRICT:

SOCIAL SECURITY NUMBER:

YEAR OF HIGH SCHOOL GRADUATION:

HOME TELEPHONE NUMBER *(Include Area Code)*

USAFA FORM JAN 83 O-125c (RRV) REQUEST FOR PCQ

C *Please Print*

LAST NAME FIRST NAME MIDDLE NAME

I am interested in attending the Air Force Academy and would like to receive information about the Academy and a Precandidate Questionnaire.

PRIVACY ACT OF 1974 STATEMENT: The Air Force Academy needs this personal data to provide you information about the AF Academy. The data will be used for Air Force Academy Recruiting. (*Authority 10 USC 503 and E.O. 9397).* Disclosure is voluntary. However, without submission of all the requested information, eligibility for selection cannot be made. The SSAN will be used as a means of identification.

NUMBER AND STREET

CITY STATE ZIP CODE

DATE OF BIRTH: MONTH DAY YEAR

CONGRESSIONAL DISTRICT:

SOCIAL SECURITY NUMBER:

YEAR OF HIGH SCHOOL GRADUATION:

HOME TELEPHONE NUMBER *(Include Area Code)*

USAFA FORM JAN 83 O-125c (RRV) REQUEST FOR PCQ

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CITY STATE ZIP CODE

DATE OF BIRTH: MONTH DAY YEAR

CONGRESSIONAL DISTRICT:

SOCIAL SECURITY NUMBER:

YEAR OF HIGH SCHOOL GRADUATION:

HOME TELEPHONE NUMBER *(Include Area Code)*

USAFA FORM JAN 83 O-125c (RRV) REQUEST FOR PCQ

PERSONNEL DIRECTORY

This directory includes personnel on duty during the spring semester, 1983.

Maj Gen Kelley

Col Delligatti

Superintendent
MAJ GEN ROBERT E. KELLEY
BS, Rutgers University; MS, George Washington University

Mobilization Augmentee to the Superintendent
MAJ GEN FRANK E. HUMPERT
BA, University of California, Berkeley; MA, Troy State University

Dean of the Faculty
BRIG GEN WILLIAM A. ORTH
BS, U.S. Military Academy; MS, Purdue University; PhD, Brown University

Commandant of Cadets
BRIG GEN ANTHONY J. BURSHNICK
BS, U.S. Air Force Academy; MS, Auburn University

Director of Athletics
COL JOHN J. CLUNE
BS, U.S. Naval Academy; MS, University of Southern California

Director of Admissions and Registrar
COL THOMAS C. WILKINSON
BS, U.S. Military Academy; MA, University of Oklahoma

Commander, USAF Academy Preparatory School
COL JOCK C. H. SCHWANK
BS, U.S. Air Force Academy; MS, PhD, University of Oregon

Chief of Staff
COL ROBERT S. DELLIGATTI
BS, U.S. Air Force Academy; MBA, Auburn University

ACADEMY STAFF

Assistant Chief of Staff and Chief of the Special Staff
COL CHARLES L. HENN
BA, University of Wyoming

Deputy Chief of Staff/Personnel
COL MILTON A. MELVILLE
BA, University of Utah; MD, Boston University

Deputy Chief of Staff/Comptroller
COL JOHN R. JAMES
BA, Occidental College

Deputy Chief of Staff/Civil Engineering
COL DIBRELL C. STOWELL
BS, Texas Tech University; MS, Rensselaer Polytechnic Institute

Deputy Chief of Staff/Logistics
COL WILLIAM T. DEWEY
BS, Utah State University; MBA, Auburn University

Command Surgeon
COL ALBERT B. BRICCETTI
BA, John Hopkins University; MD, Georgetown University Medical School

Command Chaplain
COL WILLIAM W. CAMPBELL
BA, St. John's Seminary

Inspector General
LT COL JEFFREY E. SCHOFIELD
BS, U.S. Air Force Academy; MAM, North Carolina State University; PhD, Ohio State University

Staff Judge Advocate
COL THOMAS J. SPRINGOB
BS, JD, Marquette University; MPA, University of Colorado

Deputy Chief of Staff/Morale, Welfare and Recreation
COL ROBERT C. HAWKINS
BS, MS, University of California, Los Angeles

Director of Computer Resources
COL DONALD G. PURSLEY
BS, Chadron State College; MS, Georgia Institute of Technology; DBA, George Washington University

Director of Public Affairs
COL JERRY B. HENDRIX
BS, East Texas State University

Director of Administration
LT COL EDWARD T. RISTAU
BS, Purdue University

Director for Alumni Programs
LT COL JAMES F. WHEELER
BS, U.S. Air Force Academy; MA, University of North Carolina; MS, Air Force Institute of Technology

Director of Security Police
LT COL JOSEPH W. HOFFLER
BS, North Carolina University; MBA, University of Missouri

Director of Protocol
MAJ FRANKLIN B. GOLD
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Commander, USAF Academy Band
LT COL JOHN D. MCCORD
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Director of Communications-Electronics
MAJ TED W. TRUE
BS, University of Missouri; MS, University of Southern Mississippi

Director of Social Actions
MAJ DANIEL C. WALKER
BA, Oklahoma State University; MEd, Our Lady of the Lake University; MBA, Trinity University

Commander, HQ Squadron
CAPT SHEILA M. BARKER
BS, Jacksonville State University

CAPT WILLIAM C. ROBERSON--BS, U.S. Air Force Academy; MS, Stanford University
CAPT JOHN SHERFESEE--BS, MS, University of Arizona
CAPT THOMAS P. WEBB--BS, U.S. Air Force Academy; MS, Purdue University

Instructors
MAJ FELIX SANCHEZ--BS, U.S. Air Force Academy; MS, Georgia Institute of Technology
CAPT LESLIE J. ALLEN--BS, University of Michigan; MS, Air Force Institute of Technology
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CAPT STEPHEN H. WALLINGFORD--BS, U.S. Air Force Academy; MS, Purdue University, MBA, Rensselaer Polytechnic Institute
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Professor and Head of the Department
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Assistant Professors
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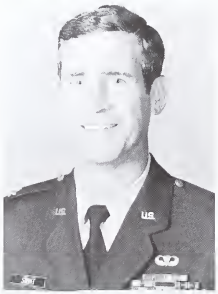

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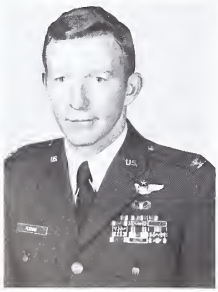

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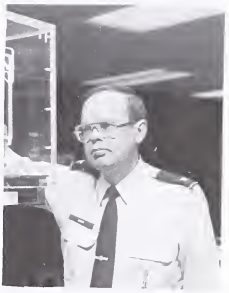

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CAPT GERALD L. SHAW--BS, University of Maine; MS, Georgia Tech University; PhD, Stanford University
1LT VICTOR L. VILLHARD--BS, Parks College; MS, Air Force Institute of Technology
2LT HENRY E. HELIN--BS, MS, University of Colorado

University Resident Research Professor
DR. ROBERT M. O'CONNELL--BE, Manhattan College; MS, PhD, University of Illinois
BILL J. SIMMONS--BS, MS, University of Oklahoma

COMMANDANT OF CADETS

Commandant of Cadets
BRIG GEN ANTHONY J. BURSHNICK--BS, U.S. Air Force Academy; MS, Auburn University

Vice Commandant of Cadets
COL JAMES R. WOODY--BS, U.S. Air Force Academy; MBA, University of California, Los Angeles; DBA, University of Virginia

Executive to the Commandant
CAPT MARK A. WILLIAMS--BS, U.S. Air Force Academy; MA, Webster College

Director of Honor and Ethics
MAJ WILLIAM L. FARIS--BS, U.S. Air Force Academy

Commander, CW Squadron Section, Assistant Professor
MAJ TRUMAN N. TAUER--BA, St Cloud State University; MA, Webster College

Directorate of Cadet Logistics Support

Director
LT COL HUGH A. GARLAND--BA, Baylor University; MS, Troy State University

Cadet Logistics Officers
MAJ GLENN GASLIN--BS, University of Evansville
CAPT DONALD L. GRABE--BS, Arizona State University
CAPT DENNIS L. HULL--BA, MBA, University of Central Florida
CAPT PATRICK A. KRAVITZ--BBA, University of Portland
CAPT TIMOTHY D. ZIEGLER--BS, Aquinas College

Cadet Personnel Services

Director
CAPT LEON L. WALKER, JR.--BS, MA, University of California, Fresno

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1LT BILLY E. BIRDWELL--BA, Southwest Texas State University

Cadet Wing Hostess
MRS. LOUISE BROWN--BS, Michigan State University

Deputy Commandant for Military Instruction

Deputy, Permanent Professor
COL PHILIP D. CAINE-- BA, Denver University; MA, PhD, Stanford University

Special Assistant
CAPT B. DAVID GRUBBS--BA, Harris Teachers College; MA, University of Northern Colorado

Sergeant Major
CMSGT WILLIAM R. NAPIER--AS, Community College of the Air Force; BS, Wayland Baptist University; MA, University of Oklahoma

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Chief, Military Training Division/Assistant Deputy Commandant for Military Instruction
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MAJ DAVID E. RENNEKAMP--BS, U.S. Air Force Academy; MBA, Golden Gate University
CAPT LARRY O. ANDERSON--MS, Michigan State University
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CAPT DARRELL D. GILLESPIE--BS, University of Nebraska
CAPT JAMES D. WHEELER--BS, Florida State University

Planetarium Branch
PATRICK MCKENNA, GS-10

Training Devices
SMSGT PAUL N. FLING--AS, State University of New York

Deputy Commandant for Operations

Deputy
COL RALPH R. ROHATSCH, JR.--BS, U.S. Air Force Academy; MBA, Auburn University

Special Assistant
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Chief
LT COL PATRICK C. MOORE--BS, U.S. Air Force Academy; MS, University of Arkansas

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MAJ BRIAN W. WRETSCHKO--BS, University of Tulsa; MA, Webster College

Chief, Pilot Standard/Evaluation Branch
MAJ JAMES E. WREN--BBA, Lamar University; MAL, Webster College

Chief, Plans and Programs Branch
MAJ FREDERICK L. MADSEN--BS, Wagner College; MS, Webster College

Chief, Flight Management Branch
CAPT DOUGLAS A. BANKER--BS, U.S. Air Force Academy

Chief, Navigation Standardization/Evaluation Branch
CAPT LEON C. PARTEE--BA, Butler University; MA, Arkansas State University

Chief, Cadet Pilot Selection
CAPT CLARENCE D. SMITH, JR.--BS, U.S. Air Force Academy; MA, Webster College

Chief, Air Operations Branch
CAPT MARK A. WILLIAMS--BS, U.S. Air Force Academy; MA, Webster College

Chief, QAE Branch
MSGT ROYCE L. MAPLES

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Operations Officer
MAJ JOHN S. BURKHART--BS, Northern Michigan University

Assistant Operations Officer
CAPT JAMES E. COLOTTA--BS, U.S. Air Force Academy

NCOIC, Executive Support
MSGT EDWARD P. LAPHAM, III--AA, Community College of the Air Force

Soaring Branch

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CAPT CHARLES C. FLYNN--BS, U.S. Air Force Academy

Instructors
CAPT BRUCE CARTER--BS, University of Georgia; MS, University of Southern California; MS, University of Michigan
CAPT MICHAEL D. HITE--BS, U.S. Air Force Academy; MS, Air Force Institute of Technology
CAPT ALAN LOMBARDI--BS, U.S. Air Force Academy
CAPT JAMES D. MARTIN--BS, Rensselaer Polytechnic Institute
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CAPT RANDY W. ROBERTS--BS, U.S. Air Force Academy
CAPT DAVID W. WEAVER--BS, University of Florida

Parachute Branch

Chief
CAPT RICHARD S. CARTER--BS, University of South Carolina

Instructors
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1LT MICHAEL E. DIONNE--BS, University of Central Florida; MA, Webster College; MBA, Golden Gate University
SMSGT MICHAEL E. COPPLE--AA, Community College of the Air Force
TSGT VANCE H. DURHAM
TSGT CRAIG A. SEYMORE
SSGT DAYTON A. BONADIE
SSGT B. K. JONES
SSGT PATRICK M. SCHRAUFNAGEL
SSGT ROBERT H. STONE
SSGT JOEL WILLIAMSON
SGT MARK W. POWER

Aviation Branch

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CAPT RALPH R. BAKER--BS, Northern Louisiana University

Instructor
CAPT GEORGE L. COX, JR --BA, University of Guam

Life Support Instructors
SSGT BERT E. BRADLEY
A1C DEBRA J. DALY

557th Flying Training Squadron

Commander
LT COL JAMES D. MANNING, JR --BS, U.S. Air Force Academy; MBA, University of Colorado

Special Assistant
CAPT MICHAEL D. LEE--BS, U.S. Air Force Academy

Operations Officer
LT COL JOHN F. WHITE--BS, U.S. Air Force Academy; MA, Webster College

Chief, Pilot Instructor Branch
CAPT TERRY D. OHLEMEIER--BA, Emporia State University

Flight Safety Officer
CAPT PHILLIP T. SIMPSON--BS, California State Polytechnic

Chief, Check Section
CAPT KEVIN J. KAAN--BS, U.S. Air Force Academy

Chief, Unit Administration
TSGT MICHAEL J. DODD--BS, University of Montana

Section Commanders
MAJ THOMAS O. MAFFETT, JR.--BA, Citadel; MA, Webster College
MAJ RONALD W. PAINE--BA, Kearney State; MBA, Oklahoma State University

Flight Commanders
CAPT STEVEN B. BLACK--BS, U.S. Air Force Academy
CAPT WILLIAM R. BRADLEY--BA, University of Colorado
CAPT JAMES V. HARTINGER, JR.--BBA, University of Northern Florida; MA, Webster College
CAPT ROY PENCE, JR --BS, U.S. Air Force Academy; MA, Oklahoma State University

Instructors
MAJ ROBERT M. ARMSTRONG--BA, Memphis State University
CAPT PAUL L. BECK--BS, U.S. Air Force Academy
CAPT GREGORY A. BRICKER--BS, U.S. Air Force Academy
CAPT MICHAEL J. BYERS--BS, U.S. Air Force Academy; MS, University of Northern Colorado
CAPT DAVID R. CASLICK--BS, U.S. Air Force Academy
CAPT BYRON C. DODGEN--BS, U.S. Air Force Academy; MA, Webster College
CAPT GREGORY R. DUNBAR--BS, U.S. Air Force Academy
CAPT DAVID S. EPPLEY--BS, U.S. Air Force Academy
CAPT BARRY S. GAMBLIN--BS, U.S. Air Force Academy
CAPT JEFF T. HASS--BS, U.S. Air Force Academy
CAPT JAMES J. HEPPNER--BS, U.S. Air Force Academy
CAPT DALE A. JENSEN--BS, Kansas State University
CAPT DENNIS M. KAAN--BAM, Auburn University
CAPT LEE D. MONSON--BS, U.S. Air Force Academy
CAPT RANDY P. OCKMAN--BA, Nichols State University
CAPT DALE R. OSTROWSKI--BS, U.S. Air Force Academy; MS, University of Northern Colorado
CAPT KEVIN J. O'TOOLE--BS, U.S. Air Force Academy
CAPT KIRK B. RICHMOND--BS, Michigan State University
CAPT ROBERT J. SAMAY--BS, Southern Illinois University
CAPT LAWRENCE W. SMITH, JR.--BS, U.S. Air Force Academy
CAPT ROGER L. SMITH--BS, U.S. Air Force Academy
CAPT EDWARD R. STEVENS--BS, U.S. Air Force Academy
CAPT HENRY M. WADE, JR.--BBA, Southern Methodist University
1LT JAMES B. WILLIAMS--BSOE, Wayland Baptist College

Detachment 1

Commander
MAJ RICHARD M. ANGLEMYER--BBA, University of Cincinnati; MBA, Phillips University

CAPT WILLIAM B. CARROLL--BBA, East Texas State University; MBA, University of New Mexico
CAPT JOSEPH G. DREW--BS, U.S. Air Force Academy
CAPT DONALD F. QUINN--BA, California State University, Fresno
CAPT TOMMY B. SCHMIDT--BA, Texas Christian University

Deputy Commandant for the Cadet Wing

Deputy
COL JOSEPH P. KOZ--BS, U. S. Military Academy; MA, Catholic University of America; PhD (ABD) American University

Assistant
LT COL RICHARD H. GOEBEL--BS, University of South Carolina; MS, University of Southern California

Staff Officer
CAPT SIDNEY R. THURSTON--BS, Kansas State University; MA, Pepperdine University

Sergeant Major fur the Cadet Wing
CMSGT JOSEPH E. L'HEREAULT

Group 1

Group AOC
LT COL KENNETH E. ROTH--BA, MA, Missouri University; MA, Webster College

Executive Officer
CAPT SANDRA M. SCOTT--BS, Oregon State University

Sergeant Major
MSGT THOMAS C. FLOWERS

AOC Squadrun 1
MAJ WARREN A. BENNETT, JR.--BS, University of North Dakota

AOC Squadrun 2
MAJ JOHN D. OTTINO-- BS, University of South Carolina; MA, University of North Carolina

AOC Squadron 3
MAJ RALPH W. GETCHELL--BS, U.S. Air Force Academy; MA, Webster College

AOC Squadron 4
MAJ GEORGE B. WATTS--BA, Denison University; MS, University of Southern California

AOC Squadron 5
CAPT HECTOR M. MARQUEZ--BA, Southwest Texas State University

AOC Squadron 6
MAJ WILLIAM F. PORTER--BS, U.S. Air Force Academy; MSBA, Boston University

AOC Squadron 7
MAJ CRAIG A. PETERSON (USA)--BS, U.S. Military Academy

AOC Squadron 8
MAJ ARTHUR W. SCHWALL, JR.--BS, U.S. Air Force Academy; MA, Oklahoma State University

AOC Squadron 9
CAPT TERRANCE DANFORD--BS, MA, University of Northern Colorado

AOC Squadron 10
CAPT JAMES A. COTTEN--BA, Howard University

Group 2

Group AOC
LT COL BERND MCCONNELL--BS, U.S. Naval Academy; MS, University of Southern California

Executive Officer
CAPT TIMOTHY E. LUCKENBACH--BS, Texas Tech University

Sergeant Major
SMSGT CHAD H. HUNT--AA, Community College of the Air Force; BS, Regis College

AOC Squadron 11
CAPT RONALD L. MORSE--BS, Southern Illinois University; MA, Louisiana Tech University

AOC Squadron 12
MAJ MARK L. CHRISTMAN--BA, State University of New York, MPA, University of Northern Colorado

AOC Squadron 13
CAPT JIM DOTSON--BA, California State University; MA, Pepperdine University

AOC Squadron 14
CAPT THOMAS L. PHELPS--BS, University of Southern Mississippi, MBA, Auburn University; MEd, Mississippi State University

AOC Squadron 15
MAJ GERRY W. SHAW--BS, U.S. Air Force Academy, MS, University of Southern California

AOC Squadrun 16
MAJ DONNA M. MOONEY--BA, University of Texas; MBA, Central Michigan University

AOC Squadrun 17
CAPT CLAYTON P. BOWEN--BA, Colorado College; MS, Gonzaga University

AOC Squadron 18
MAJ MICHAEL OONK--BS, U.S. Air Force Academy; MS, University of Arkansas

AOC Squadron 19
MAJ ROBERT W. PAULI--BS, U.S. Air Force Academy, MA, Creighton University

AOC Squadron 20
MAJ RICKEY L. GARRISON--BS, University of Tulsa; MA, Arkansas State University

Group 3

Group AOC
LT COL JAMES O. JOHNSON--BS, Tuskegee Institute; MS, University of Southern California

Executive Officer
CAPT RAYMOND B. MAGEE--BS, Colorado State University; MBA, Golden Gate University

Sergeant Major
SMSGT PATRICIA M. HOFFMAN--AA, Community College of the Air Force

AOC Squadron 21
MAJ LAWRENCE R. VERROCHI--BS, U.S. Military Academy; MA, Webster College

AOC Squadron 22
CAPT ROBERT E. WORLEY--BS, Embry-Riddle Aeronautical University

AOC Squadrun 23
CAPT ROBERT BIEHL--BS, Culver-Stockton College; MA, Ball State University

AOC Squadron 24
MAJ LARNIE MCCLUNG--BS, Mississippi Valley State University; MPA, Golden Gate University

AOC Squadron 25
CAPT JOHN T. TYRRELL--BS, U.S. Air Force Academy; MS, Troy State University; MA, University of Southern California

AOC Squadron 26
CAPT CHARLOTTE GREENE--BS, East Tennessee State University; MA, Webster College

AOC Squadron 27
CAPT RONALD E. RICHARDS--BS, U.S. Air Force Academy; MS, University of Pittsburgh

AOC Squadron 28
CAPT WADE J. KEARNS--BS, U.S. Air Force Academy, MAM, Embry-Riddle Aeronautical University

AOC Squadron 29
MAJ SAMUEL L. W. MURPHEY, JR. (USA)--BBA, University of Texas; MS, American Technological University

AOC Squadron 30

CAPT JAMES W. COLLINS, JR --BS, U.S. Air Force Academy

Group 4

Group AOC
LT COL EDWARD D. HUBER--BS, Southern Illinois University, MA, University of Northern Colorado

Executive Officer
CAPT ROBERT D. SHEA--BA, Pacific Lutheran University

Sergeant Major
CMSGT KENNETH C. GROSSE--BS, University of Southern Illinois

AOC Squadron 31
CAPT KIMBERLY J. DALRYMPLE--BS, Michigan State University; MS, University of Southern California

AOC Squadron 32
MAJ MICHAEL B. LANGEY--BA, Gettysburg College; MEd, Ohio University

AOC Squadron 33
MAJ WILLIAM A. WHITLOW (USMC)--BS, University of Kentucky, MA, Webster College

AOC Squadron 34
MAJ JOSEPH W. SMITH--BS, U.S. Air Force Academy, MS, University of Southern California

AOC Squadron 35
CAPT RANDALL B. WATSON--BS, Indiana Central College

AOC Squadron 36
MAJ JOHN E. HAYDEN--BS, U S. Air Force Academy; MBA, Oklahoma City University

AOC Squadron 37
CAPT ROBERT DIXON, JR.--BS, Morehouse College; MBA, Chapman College

AOC Squadron 38
MAJ MARK E. S. MAYHEW--BS, U.S. Air Force Academy, MS, University of Southern California

AOC Squadron 39
MAJ STEVEN J. DEHAVEN--BS, U.S. Air Force Academy

AOC Squadron 40
CAPT DAVID P. SHANAHAN, JR.--BS, U.S. Air Force Academy; MA, Golden Gate University

CADET WING PLANS, POLICY AND STANDARDIZATION/EVALUATION DIVISION

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Deputy
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Plans and Policy Branch
MAJ DAVID L. CHASE--BA, University of New Hampshire; MEd, University of Maine
CAPT ALAN D. KOCH--BS, Kansas State University; MBA, Chapman College
CAPT JAMES A. STEELE--BS, East Carolina University

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CAPT JOSEPH P. STEIN--BS, U.S. Air Force Academy; MS, University of Southern California
CMSGT DAVID R. OLIVER--BA, Park College

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Comptroller
LT COL GEORGE DEWEY--BS, University of Southern Mississippi

Chief, Facilities and Support Division
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LT COL JOHN M. GIANNONI--BBA, Hofstra University; MS, Troy State University

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Director, Sports Information
HAL BATEMAN--BA, Michigan State University

Assistant Director of Athletics for Candidate Counseling
JAMES N. BOWMAN--BS, University of Michigan

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MAJ RICHARD W. COTE, III--BS, U.S. Air Force Academy; MA, Ball State University; PhD, University of Arizona
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ARNE U. ARNESEN--BS, University of Wisconsin; MEd, Springfield College

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MAJ STEVE L. MILES--BS, Tennessee State University; MA, University of Denver
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ALICIA A. GOODE--BS, University of Massachusetts; MS, Slippery Rock State College
LUIS A. SAGASTUME--BS, University of San Francisco; MA, California State University, Chico

Instructors
MAJ STEPHEN G. LUDICK--BS, Kent State University; MA, Webster College
CAPT WILLIAM H. ALLEN--BS, MA, Southeast Missouri State University
CAPT WILLIAM K. BLOCHER--BS, University of Kansas
CAPT ROBERT C. GREEN--BA, Memphis State College
CAPT JEFFREY N. HEIDMOUS--BS, U.S. Air Force Academy
CAPT KELVIN P. KEMP--BS, U.S. Air Force Academy; MS, University of Southern California
CAPT DAN L. KIRKLAND--BS, University of Idaho; MA, Chapman College
CAPT WILLIAM K. MURPHY--BS, U.S. Air Force Academy
CAPT JAMES L. OESER--BS, Arizona State University; MA, Troy State University
CAPT ROBERT R. THONN--BA, Coe College; MA, Chapman College
LT ROBERT J. VOIGT (USN)--U.S. Naval Academy
CAPT THOMAS R. WORSDALE--BA, Clemson University; MS, Univeristy of Northern Colorado
LT MARY BETH CERVENAK--BS, Wayne State University
LT SUSAN A. EMALA--BA, Fairmont State College

LT FRANKLIN C. GROSS--BA, Adams State College
LT WILLIAM D. PEER--BS, MA, Ohio State University
LT ALFRED P. TRETTER, JR --BS, MS, Southern Illinois University
EDWARD J. WEICHERS--BS, West Chester State College

Intercollegiate Division

MEN'S INTERCOLLEGIATE ATHLETICS

Football Head Coach
KEN HATFIELD--BSBA, University of Arkansas

Assistant Coaches
MAJ DICK ELLIS--BS, U.S. Air Force Academy; MS, Texas A&M University; PhD, University of Denver
MAJ DICK ENGA--BS, University of Minnesota; MS, Troy State University
CAPT MICHAEL C. GOULD--BS, U.S. Air Force Academy
LT CARL RUSS--BA, University of Michigan
WALLY AKE--BS, College of William & Mary
LARS E. BECKMAN--BS, MS, University of Florida
JACK D. BRALEY--BS, University of Nebraska
FISHER DEBERRY--BA, Wofford College; MEd, University of Pittsburgh
FRED H. GOLDSMITH--BS, MEd, University of Florida
ROGER HINSHAW--BS, MA, Appalachian State University
SAMMY STEINMARK--BS, University of Wyoming
BOBBY F. TROTT--BS, University of North Carolina

Basketball Head Coach
HENRY J. EGAN--BS, U.S. Naval Academy

Assistant Coaches
MAJ W. REGGIE MINTON--BA, College of Wooster
CAPT DANIEL D. KRAFT--BS, U.S. Air Force Academy; MBA, University of Missouri
TRACY TRIPUCKA--BA, Lafayette University

Hockey Head Coach
JOHN MATCHEFTS--BS, University of Michigan

Assistant Coaches
CAPT CHARLES DELICH--BS, U.S. Air Force Academy
GARY WARREN--BS, University of Minnesota, Duluth

Baseball Head Coach
MAJ JOE E. ROBISON--BS, MS, Baylor University

Assistant Coaches
CAPT GEORGE S. PUGH--BS, Southern Illinois University; MS, University of Southern California
CAPT ROBERT R. THONN--BA, Coe College; MA, Chapman College

Cross Country Head Coach
MAJ RICHARD COTE --BS, U.S. Air Force Academy; MA, Ball State University; PhD, University of Arizona

Fencing Coaches
MAJ RICHARD M. BEREIT--BS, U.S. Air Force Academy; MS, Troy State University
CAPT THOMAS WORSDALE--BA, Clemson University; MS, University of Northern Colorado

Golf Head Coach
LT COL EUGENE F.MIRANDA--BA, MA, San Jose State University

Assistant Coach
CAPT RALPH D. NEVERS--BS, U.S. Air Force Academy

Gymnastics Coaches
LT COL LOUIS A. BURKEL, III--BS, University of Nebraska; MA, University of Northern Colorado
MAJ DENNIS RAMSEY--BS, Brigham Young University

Indoor Track Head Coach
LT COL W. ERNIE CUNLIFFE--BA, MA, Stanford University; EdD, University of Oregon

Assistant Coach
LT MALCOLM D. GRIMES--BS, Virginia Military Institute

Lacrosse Coach
1LT PATRICK S. PETOSA--BS, Hobart College

Pistol Coach
SSGT DEREK PHILIPS--Community College of the Air Force

Rifle Coach
LT GARY SMITH--BGS, University of Nebraska, Omaha

Soccer Coach
LUIS A. SAGASTUME--BS, University of San Francisco; MA, California State University, Chico

Swimming Coaches
CAPT KELVIN KEMP--BS, U.S. Air Force Academy; MS, University of Southern California
CAPT DAN KIRKLAND--BS, University of Idaho; MA, Chapman College

Tennis Head Coach
MAJ RICHARD F. GUGAT--BA, San Jose State University; MA, University of Denver

Assistant Coach
MAJ STEPHEN G. LUDICK--BS, Kent State University; MA, Webster College

Track Head Coach
LT COL W. ERNIE CUNLIFFE--BA, MA, Stanford University; EdD, University of Oregon

Assistant Coaches
LT MALCOM D. GRIMES--BS, Virginia Military Institute
LT FRANKLIN C. GROSS--BA, Adams State College

Water Polo Coach
CAPT JEFFREY N. HEIDMOUS--BS, U.S. Air Force Academy

Wrestling Head Coach
MAJ RICHARD W. BAUGHMAN--BS, University of Oklahoma; MA, University of Denver

Assistant Coach
CAPT JAMES L. OESER--BS, Arizona State University; MA, Troy State University

WOMEN'S INTERCOLLEGIATE ATHLETICS

Basketball Head Coach
Vacant

Cross Country Coach
LT COL W. ERNIE CUNLIFFE--BA, MA, Stanford University; EdD, University of Oregon

Fencing Coaches
MAJ RICHARD M. BEREIT--BS, U.S. Air Force Academy; MS, Troy State University

Assistant Coach
CAPT THOMAS WORSDALE--BA, Clemson University; MS, University of Northern Colorado

Golf Coach
CAPT JOHN L. STEVENS--BS, U.S. Air Force Academy

Gymnastics Head Coach
ALICIA A. GOODE--BS, University of Massachusetts; MS, Slippery Rock State College

Assistant Coach
CAPT RICHARD L. LAMPRIGHT--BS, MS, Mankato State University

Swimming Coaches
CAPT KELVIN KEMP--BS, U.S. Air Force Academy; MS, University of Southern California
CAPT DAN L. KIRKLAND--BS, University of Idaho; MA, Chapman College

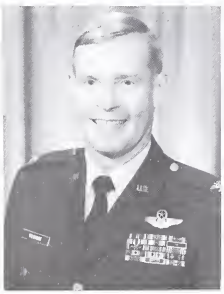
Tennis Coach
CAPT WILLIAM ALLEN--BS, MA, Southeast Missouri State University

Track Head Coach
MAJ STEVE L. MILES--BS, Tennessee State University; MA, University of Denver

Assistant Coach
CAPT ROBERT C. GREEN--BA, Memphis State College

Volleyball Coach
ILT WILLIAM D. PEER--BA, MA, Ohio State University

DIRECTORATE OF ADMISSIONS AND REGISTRAR



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Director of Cadet Admissions
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Assistant Director
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Director of Admissions Liaison
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Chief, Data Analysis Division
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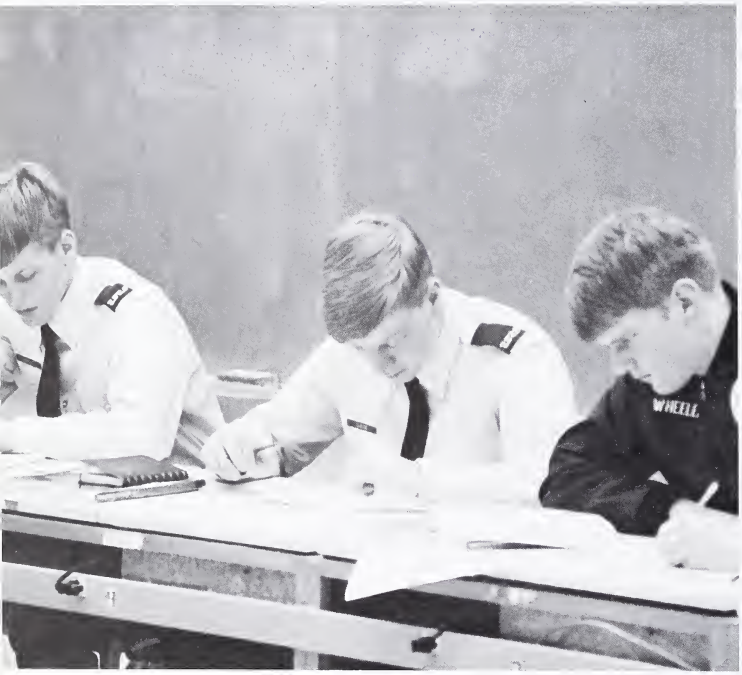
COURSE OFFERINGS

Courses offered in the curriculum including core and majors courses.

Aeronautics
Airmanship
Astronautics
Aviation



Basic Sciences
Behavioral Sciences
Biology
Chemistry
Civil Engineering
Computer Science
Economics
Electrical Engineering
Engineering
English
Fine Arts
Foreign Languages
- Arabic
- Chinese
- French
- German
- Japanese
- Russian
- Spanish

Geography
History
Humanities
Law
Management
Mathematics
Mechanics
Military Training
Philosophy
Physical Education
Physics
Political Science
Professional Military Studies
Social Sciences

"No man is born wise."
Cervantes, Don Quixote

Descriptions of the courses to be offered during the next academic year are listed here by subject in alphabetical order. Course numbers have a general meaning. The first digit of a course number normally indicates the class year for which the course is designed: 100 series for the fourthclass year, 200 series for the thirdclass year, 300 series for the secondclass year, and 400 series for the firstclass year.

Following the title of each course is a code such as 1(2). The number before the parentheses is the course unit value which is used to determine a cadet's course load for a semester and on which minimum graduation requirements are based. A "0" before the parentheses means that the course has no course unit value. The number within the parentheses is a code indicating the contact hours and scheduling pattern for the course.

A "*" designation on the right side of the parentheses means that an honors version of this course is offered. Not all honors versions are offered both fall and spring semesters. Final examination or final report requirements, course prerequisites, semester hours and offering times are shown at the end of each course description. A number of academic courses are offered in both the fall and spring semesters.

COURSE DESCRIPTIONS

AERONAUTICS (Aero)

Offered by the Department of Aeronautics

Aero 311. Fundamentals of Aeronautics. 1(1)*
History. Introductory fluid mechanics. Airfoil and wing aerodynamics. Steady and accelerated aircraft performance. Stability and control. Final exam. Prereq: Engr 110. Sem hrs: 3 fall or spring.

Aero 312. Introductory Engineering Thermodynamics. 1(1)*
First law and energy. Working fluids for cycles. Second law and entropy. Power cycles. Final exam. Prereq: Math 132. Sem hrs: 3 fall or spring.

Aero 356. Flight Mechanics I. 1(1)
Airplane equations of motion. Takeoff and landing, steady and accelerated performance. Static and dynamic stability. Control and handling qualities. Lab. Final exam. Prereq: Aero 311. Sem hrs: 3 fall or spring.

Aero 363. Heat Transfer. 1(1)
Energy transport by conduction, convection, and radiation. Steady and unsteady heat flow. Free and forced convection. Thermal boundary layers. Black and gray body radiation. Lab. Final exam. Prereq: Aero 312. Sem hrs: 3 fall or spring.

Aero 371. Aerodynamics I. 1(2)
Kinematics and dynamics of a fluid field, thin airfoil theory and the finite wing, application of one-dimensional compressible flow. Lab. Final exam. Prereq: Aero 311; Completed or enrolled in Aero 312; Math 211 (210). Sem hrs: 3 fall or spring.

Aero 372. Aerodynamics and Design. 1(2)
Aerodynamic theories and mechanical properties of shapes as applied to the determination of aerodynamic loads and design of major aircraft components (wing, fuselage, tail). Lab. Final report. Prereq: Mech 210; completed or enrolled in Aero 371. Sem hrs: 3 fall or spring.

Aero 377. Computational Aerodynamics. 1(1)
Application of computational techniques to fluid mechanics, introduction to numerical analysis, computer plotting methods. Final exam. Prereq: Comp Sci 100; Aero 311; completed or enrolled in Aero 371. Sem hrs: 3 fall or spring.

Aero 450. Aeronautical Laboratory. 1(2)
Selected experiments in the fields of aerodynamics, gas dynamics, propulsion, and flight mechanics. Wind tunnel used in design project. Lab. Final report. Prereq: Aero 371; Aero 356. Sem hrs: 3 fall or spring.

Aero 457. Flight Mechanics II. 1(1)
Continuation of Aero 356. Topics in accelerated performance. Aircraft stability, control, and handling qualities analyses. Lab. Final exam. Prereq: Aero 356. Sem hrs: 3 fall or spring.

Aero 461. Propulsion I. 1(1)
Chemical rockets and airbreathing engines. Cycle analysis and preliminary design of jet engines. Lab. Final project. Prereq: Aero 311; Aero 312; Math 211 (210). Sem hrs: 3 fall or spring.

Aero 462. Propulsion II. 1(1)
Advanced studies of airbreathing engines and rocket propulsion systems. Off-design performance of turbojet and turboprop engines. Analysis of jet engine components. Final project. Prereq: Aero 461. Sem hrs: 3 fall or spring.

Aero 463. Advanced Topics in Aeronautics. 1(1)
Topics of current interest in aerodynamics, propulsion, performance, stability and control. Final exam. Prereq: Department permission. Sem hrs: 3 spring.

Aero 464. Aircraft Design. 2(2)
Fundamentals of design presented through conceptual design of an advanced aircraft involving consideration of aerodynamics, propulsive system, flight mechanics and structures. Final report. Lab. Prereq: Aero 356. Sem hrs: 6 fall or spring.

Aero 466. Propulsion Design. 2(2)
Fundamentals through preliminary design of an airbreathing propulsion system for an advanced aircraft. Determination of on- and off-design engine parameters and engine size. Preliminary component design and integration. Lab. Final report. Prereq: Aero 461. Sem hrs: 6 spring.

Aero 471. Aerodynamics II. 1(1)
One-dimensional gas dynamics and wave motion, waves in supersonic flow, small perturbation theory, slender body theory, similarity rules, introduction to viscous flows. Lab. Final exam. Prereq: Aero 371. Sem hrs: 3 fall or spring.

Aero 472. Thermodynamics of Energy Conversion. 1(1)
Energy conversion in a wide variety of applications. Field trip. Final exam. Prereq: Aero 312. Sem hrs: 3 fall or spring.

Aero 495. Special Topics. 1(1-2)
Selected topics in aeronautics. Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department (not more than 3 sem hrs).

Aero 499. Independent Study. 1(0)
Individual study and research supervised by a faculty member. Topic established with the department head. Final report. Sem hrs: 3 fall or spring.

AIRMANSHIP (Armnshp)

Offered by the Deputy Commandant for Operations

Armnshp 101. Airmanship Introduction. 0(0)
Introduces fourthclass cadets to available Airmanship programs. Provides a sailplane and/or T-41 orientation flight to demonstrate basic principles of flying and motivate towards development of aviation skills. No grade. Sem hrs: 0. Basic Cadet Summer.

Armnshp 441. Pilot Indoctrination Program. 1(0)
Required course for all physically qualified firstclass cadets who volunteer to attend USAF Undergraduate Pilot Training. Includes ground training, and dual and solo flight training in the T-41C aircraft. Pass/Fail. Sem hrs: 3 summer, fall and spring.

Armnshp 449. Private Pilot Ground School. 0(1)
Ground school to prepare cadets for the FAA Private Pilot written examination. Pass/fail. Sem hrs: 1 fall or spring.

Armnshp 450. Airplane Rating, Private. 0(0)
Dual and solo flight training to complete the requirements for an FAA Private Pilot Certificate. This training is conducted at the USAFA Aero Club at the cadet's expense (some subsidy is available from the Cadet Aviation Club). Pass/fail. Sem hrs: 1 summer, fall or spring.

Armnshp 451. Glider Instruction, Dual/Solo. 0(1)
Ground school, dual and solo flight training which may lead to FAA Private Pilot Glider Rating. An elective course offered during the academic day open to all classes, but normally pursued during the thirdclass year. Pass/fail. Sem hrs: 2 spring, summer, or fall.

Armnshp 459. Commercial Pilot Ground School. 0(1)
Ground school to prepare cadets for the FAA Commerical Pilot written exam. Prereq: Armnshp 450 or FAA Private Pilot Certificate. Pass/fail. Sem hrs: 2 fall or spring.

Armnshp 460. Airplane Rating, Commercial. 0(0)
Dual and solo flight trainng to complete the requirements for an FAA Commercial Pilot Certificate. This training is conducted at the USAFA Aero Club at the cadet's expense (some subsidy is available from the Cadet Aviation Club). Prereq: Armnshp 450 or FAA Private Pilot Certificate. Pass/fail. Sem hrs: 1 summer, fall or spring.

Armnshp 461. Glider Rating, Commercial. 0(0)
Ground school, dual and solo flight training for an FAA Commercial Pilot Glider Rating. Pass/fail. Prereq: Armnshp 451 or FAA Private Pilot Glider Rating. Sem hrs: 2 fall.

Armnshp 469. Instrument Ground School. 0(1)
Ground school to prepare cadets for the FAA Instrument Pilot written exam. Prereq: Armnshp 450 or FAA Private Pilot Certificate. Pass/fail. Sem hrs: 2 fall or spring.

Armnshp 470. Airplane Rating, Instrument. 0(0)
Dual flight instruction to complete the requirements for an FAA Instrument Pilot Rating. This training is conducted at the USAFA Aero Club at the cadet's expense (some subsidy is available from the Cadet Aviation Club). Prereq: Armnshp 450 or FAA Private Pilot Certificate. Pass/fail. Sem hrs: 1 summer, fall, or spring.

Armnshp 471. Glider Rating, Flight Instructor. 0(0)
Ground school and dual instruction for an FAA Flight Instructor Glider Rating. Pass/fail. Prereq: Armnshp 461 or FAA Commercial Pilot Glider Rating. Sem hrs: 2 spring.

Armnshp 480. Airplane Rating, Flight Instructor. 0(0)
Dual flight training to complete the requirements for an FAA Flight Instructor, Airplane, Rating. This training is conducted at the USAFA Aero Club at the cadet's expense (some subsidy is available from the Cadet Aviation Club). Prereq: Armnshp 460 or FAA Commercial Pilot Certificate. Pass/fail. Sem hrs: 1 1/2 summer, fall or spring.

Armnshp 490. Basic Free Fall Parachuting. 0(0)
Trains cadets in free fall parachuting and familiarizes them with emergency parachuting as it pertains to Air Force careers. Successful completion entitles student to wear the Air Force Basic Parachutist Badge. Pass/ fail. Prereq: Passing score on special physical fitness test and not completed Mil Tng 452. In summer, 1/C, 2/C or 3/C standing in spring, 1/C, 2/C, 3/C or 4/C standing. Training frequently conducted after school and on weekends. Sem hrs: 2 summer or spring.

Armnshp 491. Advanced Parachute Training. 0(0)
Ground and aerial training which allows cadets to progress from initial free fall training to the basics of free falls, controlled body maneuvers, and precision landings. Practice with conventional and ram-air canopies. Introduction to instructional techniques, jumpmaster procedures and competitive parachuting. Training frequently conducted after classes and on weekends. Requirements are partially fulfilled toward Class B, U.S. Parachute Association License. Pass/Fail. Prereq: 2/C or 3/C standing and Armnshp 490. Sem hrs: 1-1/2 fall.

Armnshp 492. Cadet Parachute Instructor Training. 0(0)
Trains selected cadets as instructors and jumpmasters for Armnshp 490. Cadets receive training in instructional techniques and jumpmaster procedures. Aerial training consists of proficiency jumps; ground training consists of instruction on inspection, packing, and maintenance of conventional and advanced parachutes. Participation in spring training exercise is mandatory. Training conducted after classes and on weekends. Requirements are partially fulfilled toward Class C, U.S. Parachute Association License. Pass/fail. Prereq: 2/C or 3/C standing. Armnshp 491 and Airmanship Division permission. Sem hrs: 2 spring.

Armnshp 496. Cadet Parachute Instructor Duty. 0(0)
Selected cadets serve as instructors and jumpmasters in Armnshp 490. Cadets participate in competitive parachuting events and parachute demonstrations throughout the United States. (Completion during summer offering fulfills 1/2 requirement for Mil Tng 300 or Mil Tng 400.) Training frequently conducted after classes and on weekends. Pass/fail. Prereq: Armnshp 492 and Airmanship Division permission. Sem hrs: 2 summer, fall, or spring.

Armnshp 497. Cadet Soaring Instructor Duty. 0(0)
Selected cadets serve as instructors in Armnshp 101, 451, 461, and 471. Pass/fail. Prereq: Armshp 471. Sem hrs: 2 summer, fall or spring.

ASTRONAUTICS (Astro)

Offered by the Department of Astronautics

Astro 332. Introduction to Astronautics. 1(1)
Fundamental analysis of the problems and principles of astronautics: Includes problem modeling, elementary error analysis, flat earth trajectories, ballistic missile trajectories; surveys rocket propulsion, inertial navigation and guidance, re-entry, the space environment and present Air Force space operations. The restricted two-body model is applied to satellites and interplanetary trajectories, methods of orbit description and determination, Hohmann transfer orbits, plane changes, satellite rendezvous, and ground traces. Final exam. Prereq: Math 211 (210); completed or enrolled in Physics 211. Sem hrs: 3 fall or spring.

Astro 360. Space Vehicle Systems. 1(1)
This course introduces cadets to the support and mission systems used on space vehicles. The support systems include structures, propulsion, communication, power, and ground support. The mission systems include sensor systems, navigation, guidance and control, and environmental control. A current space vehicle will be used to show the interdependence of these systems. Final exam. Prereq: Astro 332. Sem hrs: 3 fall or spring.

Astro 450. Applications of Aerospace Guidance and Control. 1(1)
Introduction to the engineering application of rotational and translational equations of motion for rigid and non-rigid bodies. Various aerospace systems such as gunsights, air-to-air missiles, ICBMs and satellites are used in the study of guidance and control problems. Final exam. Prereq: Mech 320, Physics 357 or Engr 351; Engr 350 or El Engr 340. Sem hrs: 3 spring.

Astro 451. Astrodynamics. 1(1)
A basic course in two-body orbit mechanics. Topics include an introduction to orbit determination, time and position in the orbit, orbit maneuvers, rendezvous and docking. Emphasis is on using the digital computer to solve astrodynamics problems. Final exam. Prereq: Completion of any core math sequence; Comp Sci 100 ; Astro 332; Physics 211. Sem hrs: 3 fall or spring.

Astro 452. Linear Control System Analysis and Design. 1(2)
Formulation and analysis of the linear control problem by both state variable and transform methods. Synthesis of linear control systems emphasizing the root locus and Bode methods. Includes laboratory analysis and synthesis with real hardware and/or analog simulation. Final report. Prereq: Engr 350 or El Engr 340. (Note: It is highly recommended that a cadet scheduled for Engr 350 and El Engr 340 take Astro 452 after Engr 350.) Sem hrs: 3 fall or spring.

Astro 453. Advanced Astrodynamics. 1(1)
A continuation of Astro 451. Topics include orbit determination, data smoothing, differential correction, general and special perturbations and interplanetary trajectories. The development of tools and skills necessary to solve realistic astrodynamics problems is emphasized. Final exam. Prereq: Astro 451. Sem hrs: 3 fall.

Astro 454. Inertial Navigation. 1(1)
Inertial navigation including studies of accelerometers, gyroscopes, gyrostabilized platforms, strapdown platforms; system mechanization; navigation equation development and system error analysis, and estimation including least squares and optimal filtering. Final exam. Prereq: Astro 452; Engr 351. Sem hrs: 3 fall.

Astro 465. Modern Control Theory and Design. 1(2)
State variables, full-state feedback, estimation theory, optimal control, and phase plane techniques. Methods are applied to the design of control systems for aircraft and spacecraft. Final project report. Prereq: Astro 452 or department permission. Sem hrs: 3 fall.

Astro 466. Digital Control Theory and Design. 1(2)
Recent theory and developments in digital control and their relation to Air Force systems. Sampled data systems, z-transform theory, digital estimation, and optimal digital systems. Microcomputers are used during laboratory experiments. Final project report. Prereq: Astro 465 or department permission. Sem hrs: 3 spring.

Astro 468. Aerospace Vehicle Systems Design. 1(2)
Design of aerospace systems and subsystems. Description and applications of state-of-the-art subsystems and advanced designs. Application of tools and techniques from previous courses including digital and analog computers for analysis and synthesis. Field trip and lab. Final project report. Prereq: Astro 360 or department permission. Sem hrs: 4 fall.

Astro 470. Space Mission Design. 1(2)
The basic principles of designing space missions with emphasis on the space shuttle and other current programs. Topics include mission objectives and constraints; feasibility studies; time-line generation; launch, on-orbit, and recovery operations; and contingency planning. Computer simulations will be developed to analyze typical missions. Final project. Prereq: Astro 451; Astro 360. Sem hrs: 3 spring.

Astro 495. Special Topics. 1(1)
Selected topics in astronautics. Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department (not more than 3 sem hrs.)

Astro 499. Independent Study. 1(0)
Individual study and research supervised by a faculty member. Topic established with the department head. Final report. Sem hrs: 3 fall or spring.

AVIATION (Av)

Offered by the Deputy Commandant for Military Instruction

Av 100. Introduction to Aviation Fundamentals and Space Science. 0(2xx)
Provides an exposure to Air Force flight activities, operations, and the space environment. Offers a meaningful flight experience to cadets. Cadets will receive two T-37 simulator rides, a T-43 flight mission to an operational Air Force base, and presentations in the planetarium. In addition, provides an orientation to basic aerodynamics, radar navigation, flight instrumentation, avionics, and space operations. Pass/fail. No final. Sem hrs: 1 fall or spring of fourthclass year or summer of third-class year

Av 280. Navigation Fundamentals. 1(2)
Prepares cadets for a rated Air Force career. Gives cadets an opportunity to function as aircrew members, provides an understanding of basic navigation theory and equipment as an introduction to pilot training, and exposure to selected operational Air Force units and operational aircraft. Three flight missions. No final exam. Prereq: Av 100. Sem hrs: 3 fall or spring. (May not be taken in same semester with any other flying course. Not open to cadets who have completed Av 460 or Av 470.)

Av 460. Studies in Aviation Fundamentals. 1(0)
Aviation instruction in navigation fundamentals, including classroom, trainer, and T-43 flights. Experience is gained in aviation environment to demonstrate professional Air Force flight duties and responsibilities. No final exam. Prerequisite: 1/C or 2/C standing or Aviation Science Division approval. Semester hrs: 3 summer. (May be taken by commission-only cadets as a flying core in lieu of Av 470.)

Av 470. Applied Aviation and Navigation Theory. 1(2)
Practical application of air navigation and aviation procedures/ equipment. Includes classroom and trainer instruction in preparation for flight missions in the T-43 aircraft. Encompasses air navigation from basic dead reckoning through radio, radar, and celestial positioning techniques. Develops an insight into the requirements and responsibilities of a navigator through actual experience in a flying environment, on both local and cross-country flights. Final exam. Prereq: 1/C, 2/C, or 3/C standing. 4/C standing with Av 100 and Aviation Science Division approval. Sem hrs: 3 fall or spring.

Av 471. Advanced Applied Navigation. 1(1)
Integrates airplot procedures, fuel planning, and weather with material from the basic aviation course. Flying, accomplished in the T-43, emphasizes the proficiency required in the navigation procedures phase of Undergraduate Navigator Training (UNT). Cadets who satisfactorily complete this course may proficiency advance up to 20 days of UNT. Final exam. Prereq: 1/C standing; Av 470 or Aviation Science Division approval. Sem hrs: 3 spring.

Av 490. Avionics Concepts and Systems Development. 1(1)
Discussion of avionics and systems including inertial, Doppler, astrotrackers and radar. In-depth study of the underlying theory for these systems using the T-43 as an example of a modern, integrated navigation system. In-flight application of academics in conjunction with a visit to a facility involved in the development or operation of advanced navigation systems. Final report. Sem hrs: 3 fall or spring.

Av 493. Cadet Aviation Instructor Training. 0(0)
Trains selected cadets as instructors for aviation flying programs. Provides additional training in navigation techniques, and provides field training in astronomy and planetarium operation. To retain rating, qualified cadet instructors must maintain required instructor proficiency in subsequent semesters. (Fulfills 1/2 requirement for Mil Tng 300 or Mil Tng 400.) Final exam. Prereq: Av 470. Pass/fail. Sem hrs: 3 summer.

Av 495. Special Topics in Aviation Sciences. 1(1)
Selected special topics in navigation, astronomy, or aviation sciences. Final exam or final report. Prereq: Division Chief approval. Sem hours and offering time determined by division. (Not more than 3 sem hrs.)

Av 498. Cadet Aviation Instructor Duty. 0(0)
Cadets maintain proficiency acquired in Av 493. Instruct in Av 470 and Av 100 classroom, trainers and flying programs. To retain rating cadet must provide 60 hours of contact time with Aviation Science Division programs each semester. No final. Prereq: Av 470 and Av 493. Pass/fail. Sem hrs: 3 summer, fall or spring.

Av 499. Independent Research and Study. 1(0)
Individual study or research in navigation, astronomy, or aviation sciences under the direction of a division instructor. Final exam or final report. Prereq: Division Chief approval. Offering time determined by division. Sem hrs: 3.

See Navigation listings for other Aviation Science Division courses.

See Mil Tng 100 for additional cadet flying administered by the Aviation Science Division.

BASIC SCIENCE (Bas Sci)

Bas Sci 400H. Basic Science Honors Seminar. 1(1)
An interdisciplinary analysis of contemporary energy alternatives and environmental constraints. Students will participate in and lead discussions in advanced nuclear, solar, chemical and biological technologies and quantitative methods. Guest lecturers, field trips, and final report. Prerequisites: First Class Honors Degree candidate or permission of the Division Chairman. Administered by Department of Mathematical Sciences with instructors from all Basic Sciences Departments. Sem Hrs: 3 fall or spring.

BEHAVIORAL SCIENCES (Beh Sci)

Offered by the Department of Behavioral Sciences and Leadership

Beh Sci 110. General Psychology. 1(1)*
Presents determinants of behavior which contribute to physical, psychological, and social maturity. Applies psychological principles of learning, human development, perception, motivation, personality, mental health, and group processes to understanding human behavior, achieving personal adjustment and developing Air Force leadership. Final exam. Sem hrs: 3 fall or spring.

Beh Sci 220. Behavioral Science Applications to Leadership - Phase I. 1/2(1)*
Examines organizational and small group dynamics as sources of influence on the leader and the led. Includes an in-depth analysis of both the leader's role in managing human resources and as a decision maker. Topical military problems are considered in the light of contemporary leadership theories. Final exam. Prereq: Beh Sci 110; 3/C standing. Sem hrs: 1 1/2 fall or spring.

Beh Sci 330. Behavioral Science Applications to Leadership - Phase II. 1/2(1)*
This course continues the study of behavioral science applications to leadership roles. It examines the interpersonal context of leadership and supervisory behavior, emphasizing those attitudes and skills which contribute to constructive interactions with others. Topics include communication, social influence, and the nature of group interaction. Topical military problems are considered in the light of current behavioral science knowledge. Final exam. Prereq: Beh Sci 220. Sem hrs: 1-1/2 fall or spring.

Beh Sci 331. Basic Research Design and Statistics. 1(2)
An integrated course in how to conduct behavioral science research. Uses descriptive statistics and univariate parametric and non-parametric statistics in behavioral sciences applications. Experiments provide practical experience with the relevant aspects of experimental design and statistics. Lab. Final exam. Prereq: Beh Sci 110. Sem hrs: 3 fall.

Beh Sci 332. Advanced Research Design. 1(2)
Continues the integrated approach to statistics and experimental psychology, extending cadet experience into more complicated experiments. Advanced multivariate experimental designs and statistics are learned and applied in behavioral sciences experiments. Includes a team-replicated research project which is cadet-conducted, analyzed, and presented as a journal submission and professional oral presentation. Lab. Final exam. Prereq: Beh Sci 331. Sem hrs: 3 spring.

Beh Sci 352. Social Psychology. 1(1)
Investigates interactional forces between groups and the individual in society. Examines effects of diverse social and psychological pressures such as public opinion and propaganda on the individual and groups. Emphasis is placed on attitude formation and change, aggression, and conformity. Final exam. Prereq: Beh Sci 110. Sem hrs: 3 fall or spring.

Beh Sci 373. Human Factors Engineering: Concepts and Theory. 1(1)
Investigates the history, principles, and guidelines of human factors as they impact the design of objects, places, and environments used by people. Emphasizes understanding the capabilities and limitations of man as an integral part of man-machine systems and the translation of this knowledge into engineering principles and specifications. Final exam. Prereq: Beh Sci 110, department permission. Sem hrs: 3 fall.

Beh Sci 374. Human Factors Engineering: Applications & Evaluation. 1(2)
Addresses the incorporation of human factors in man-machine systems. Includes design projects of products, work places, and work environments. Emphasizes the systems approach to development and evaluation. Final Project. Lab. Prereq: Beh Sci 373, department permission. Sem hrs: 3 spring.

Beh Sci 377. Organizational Behavior and Industrial Psychology. 1(1)
A systematic study of human behavior in the world of work. Examines power and authority; roles, status, and norms; communications, motivation, group dynamics; and conflict management. Considers selection, evaluation, appraisal, and training as aspects of personnel psychology. Explores the conditions of work, engineering psychology, and hazards of work as elements of the work place. Reviews of journal articles are required. Final exam. Sem hrs: 3 fall or spring.

Beh Sci 380. Theories of Personality. 1(1)
Examines major theories of personality including behavioral, psychoanalytic, humanistic and trait approaches. Theories are examined with respect to concepts of personality development, assessment techniques, research methodologies and applications to current issues. Final exam. Sem hrs: 3 fall.

Beh Sci 385. Abnormal Psychology. 1(1)
Examines the etiology, nature and treatment of mental disorders with emphasis upon understanding the psychosocial context of maladaptive behavior. Term paper. Sem hrs: 3 fall or spring.

Beh Sci 435. Theories of Learning. 1(2)
Critically examines principles and theories of learning including methodology and evaluation of research pertaining to learning processes. Reviews current applications of research and theories. Lab. Individual research project. Prereq: Beh Sci 110. Sem hrs: 3 fall or spring.

Beh Sci 450. Psychobiology. 1(2)
Examines the neurophysiological bases of human and animal behavior. Emphasis is on central nervous system mechanisms which mediate processes such as learning, intelligence, motivation, and arousal. Special consideration is given to sensation and perception, which impact on human factors design concerns. Correlates the experimental evidence of physiology and psychology to explain behavior. Lab. Research paper. Prereq: Biology 110, Beh Sci 110. Sem hrs: 3 fall or spring.

Beh Sci 464. Organizational Development. 1(2)
Presents concepts, principles, and assumptions of organizational development (OD) and planned organizational change. Details models and methods for change and gives hands-on experience with practical exercises to practice the better known approaches to OD. Emphasizes techniques used for OD such as job enrichment, goal setting, team building, conflict resolution, and survey feedback. Includes exercises at the individual, team and section participation level. A review of the literature or completion of individual research project is required. Prereq: Beh Sci 377. Sem hrs: 3 fall or spring.

Beh Sci 471. Attention and Human Performance. 1(1)
Investigates the human operator as a processor of information. Examines, in detail, critical environmental, task, and individual characteristics affecting perceptual, decision-making and response processes. Final exam. Prereq: Beh Sci 110, department permission. Sem hrs: 3 fall.

Beh Sci 490. Counseling and Group Dynamics. 1(2)
Examines and evaluates counseling approaches and techniques. Considers relevant issues from the broader context of interpersonal behavior and group dynamics. Theory and structured exercises complement each other to develop understanding and skills in small group interactions. Lab. Term paper. Final exam. Sem hrs: 3 fall or spring.

Beh Sci 495. Special Topics. 1(1)
Selected topics in the Behavioral Sciences such as cultural anthropology, sociology, and marriage and the family. Final exam or report. Prereq: Department permission. Sem hrs: 3 fall or spring.

Beh Sci 499. Independent Study. 1(0)
Independent research or practicum in a specific area of behavioral science. Conducted on a tutorial basis. Term paper. Prereq: 1/C standing; department permission. Sem hrs: 3 fall or spring.

BIOLOGY

Offered by the Department of Biology

Biology 110. Introduction to Biological Systems. 1/2(1)*
An introduction to the structure and function of biological systems from atoms through the biosphere. The course emphasizes the interrelationships among chemistry, physics, mathematics, and engineering in forming the framework of biological laws resulting in the basic unity and extraordinary diversity of life. Discussions are directed toward recent discoveries in biology and how these discoveries affect society and the Air Force. Final Exam. Sem hrs: 1-1/2 fall or spring.

Biology 330. Basic Biological Science I. 1(2)
First semester of general biology emphasizing the integrated principles of modern zoology. Special emphasis is placed on the fundamental life processes, reproduction, heredity, evolution, taxonomy, animal behavior, and ecology. Demonstration and student participation laboratories including dissection, microscopic analysis, and field trips. Final exam. Sem hrs: 3 fall or spring.

Biology 331. Basic Biological Science II. 1(2)
Second semester of general biology emphasizing the principles of plant biology. The course is centered around a survey of the plant kingdom and plant related organism. Special emphasis is placed on plant morphology, physiology, bioenergenetics, and ecology. Demonstration and student participation laboratories including dissection, microscopic analysis, and field trips. Final Exam. Sem hrs: 3 fall or spring.

Biology 363. Genetics. 1(1)
Study of the basic mechanisms and patterns of inheritance and their implications for the individual and society. Discusses the interrelationships of hereditary and environmental effects on the growth and development of individuals and populations. Final exam. Sem hrs: 3 spring.

Biology 380. Bioenvironmental Science. 1(1)
Fundamental interrelationships between organisms and their environments emphasizing energy flow through ecosystems, biogeochemical cycling, and population dynamics. Emphasis is placed on on how man's activities affect major world biomes. Final exam. Sem hrs: 3 fall or spring.

Biology 381. Advanced Bioenvironmental Science. 1(2)
Leeture and laboratory that addresses ecology and field biology. Lecture includes biotic and abiotic inputs and controls of various ecosystems. Laboratory exercises introduce survey techniques used to make field trip studies. Classroom and laboratory work emphasize environmental issues that are of special interest to Air Force personnel. Final exam. Prereq: Biology 380 or department permission. Sem hrs: 3 fall.

Biology 383. Human Anatomy. 1(2)
Lecture and laboratory studies of detailed human anatomy with special emphasis on the following organ systems: integumentary, skeletal, muscular, nervous, circulatory, digestive, respiratory, urinary, reproductive, and endocrine. Final exam. Sem hrs: 3 fall.

Biology 420. Biokinetics. 1(1)
In-depth lecture and seminar studies of the human organism in motion in terms of anatomical, physiological, and mechanical principles. The biomechanical aspects of force, leverage, and impetus are explored in a variety of neuromuscular skills. Final paper. Sem hrs: 3 spring.

Biology 431. Microbiology. 1(2)
Lecture and laboratory studies of micro-organisms common to our environment. Presents a broadly based introduction of microbial morphology, physiology, genetic mechanisms (including recombinant techniques), host-pathogen relationships, microbial control and immunology. Laboratory stresses systematic identification of microbial species. Final Exam. Prereq: Biology 330 or department permission. Sem hrs: 3 spring.

Biology 445. Comparative Animal Physiology. 1(1)
Comparison of physiological function among the various animal groups. Mechanisms of physiological adaptation peculiar to animal groups or species will be emphasized. Final exam. Prereq: Biology 330. Sem hrs: 3 fall.

Biology 447. Physiology. 1(2)
Lecture and laboratory study of human physiology. Emphasis is on the function of organ systems and their integration. Central concepts include homeostasis, acclimatization to stress, and control mechanisms. Final exam. Sem hrs: 3 spring.

Biology 460. Cell and Molecular Biology. 1(1)
A study of the structure and function of the living cell. Special emphasis is placed on cell types, biological molecules, enzymes, membrane dynamics, bioenergetics, organelles, nuclear control mechanisms, and current investigative techniques. Field trip. Final paper. Sem hrs: 3 fall.

Biology 480. Research Analysis. 1(2)
A survey of experimental biology through seminars, discussions, and laboratory work. Emphasis is on student participation and exploring areas of current biological importance. Students will choose and analyze research papers, present their findings, discuss the ethical implications of research, and experience the scientific processes inherent in modern biology. Final report. Prereq: Departmental permission. Sem hrs: 3 fall or spring.

Biology 495. Special Topics. 1(1)
Selected topics in the biological sciences. Final exam or final report. Prereq: Department permission. Sem hrs and offering times determined by department (not more than 3 sem hrs).

Biology 499. Independent Study. 1(0)
Individual research in the biological sciences under the direction of a faculty member. Emphasizes the use of laboratory facilities. Research report. Prereq: Bio Sci 330; department permission. Sem hrs: 3 fall or spring.

CHEMISTRY (Chem)

Offered by the Department of Chemistry

Chem 111-112. General Chemistry. 1-1(2-2)*
A course covering the fundamental concepts of chemistry with addtional emphasis on the application of chemical principles. Topics covered include chemical bonding and structure, chemical equilibrium, chemical thermodynamics, organic chemistry, gas laws, kinetics, and special topics. Laboratory experiments in chemical principles and processes. Honors sections are offered both semesters; these will cover fundamental concepts in greater depth with added emphasis on special topics and lab applications. Final examination both semesters. Must be taken sequentially. Class trip both semesters for Honors sections. Sem hrs: Chem 111 - 3 fall; Chem 112 - 3 spring.

Chem 222. Analytical Chemistry. 1(2)
Laboratory instruction in classical and modern analytical measurements, supplemented with lectures which emphasize laboratory principles. Final exam. Prereq: Chem 112 or Chem 112H. Sem hrs: 3 fall or spring.

Chem 230. Introductory Organic Chemistry. 1(1)
Introduction to the aspects of organic chemistry important to students in the biological sciences or related areas. Topics include: nomenclature of organic compounds; stereochemistry; reaction mechanisms; structures and reactions of organic functional groups; introduction to carbohydrates, lipids, amino acids and proteins, and nucleic acids. (This is a service course primarily designed for Biology and Basic Science majors. Chemistry majors and those cadets desiring to apply for medical school will not take this course in lieu of Chem 233-234.) Final Exam. Prereq: Chem 112 or 112H. Sem hrs: 3 fall.

Chem 233. Organic Chemistry I. 1(1)
Classification and naming of organic compounds, synthesis and reactions of organic functional groups, stereochemistry, introduction to resonance, spectroscopy, and reaction mechanisms. Final exam. Prereq: Chem 112 or Chem 112H; concurrent enrollment in Chem 243 is recommended but is optional for non-chemistry majors. Sem hrs: 3 fall.

Chem 234. Organic Chemistry II. 1(1)
Continuation of the reactions of aliphatic and aromatic compounds and reaction mechanisms. Introduction to carbohydrates, polynuclear aromatics, heterocyclic compounds, amino acids and proteins, and multi-step syntheses. Final exam. Prereq: Chem 233; concurrent enrollment in Chem 244 is recommended but is optional except for accredited track chemistry majors. Sem hrs: 3 spring.

Chem 243. Organic Chemistry I Lab. 1(2)
Experiments in the preparation, purification and identification of representative organic compounds. Introduction to vapor phase chromatography, infrared spectroscopy, and nuclear magnetic resonance spectroscopy as applied to the identification of organic compounds. The lab is designed to illustrate the principles involved in Chem 233. Prereq: Completed or enrolled in Chem 233. Sem hrs: 3 fall.

Chem 244. Organic Chemistry II Lab. 1(2)
This is a continuation of Chem 243 and includes applications of infrared, proton magnetic resonance, mass spectra, and chromatographic analysis of organic materials prepared in the laboratory. The principles of organic chemistry are tied together at the end of the semester in a special project designed to familiarize the student with library research, independent lab work, and illustrate the chemical principles studied in Chem 233/234. Prereq: Chem 243; completed or enrolled in Chem 234. Sem hrs: 3 spring.

Chem 335. Physical Chemistry I. 1(1)
Chemical thermodynamics and equilibria; properties of gases, liquids, and solutions; phase equilibria; electrochemistry; chemical kinetics. Final Exam. Prereq: Chem 112 or Chem 112H. Sem hrs: 3 fall.

Chem 336. Physical Chemistry II. 1(1)
Molecular quantum theory, structure and spectroscopy; statistical thermodynamics; molecular dynamics. Final Exam. Prereq: Chem 335. Sem hrs: 3 spring.

Chem 345. Physical Chemistry I Lab. 1(2)
Laboratory measurement of physical properties including thermodynamics of liquid and gases; thermochemistry of reactions; phase and chemical equilibria; colligative properties. Precision of measurement, statistical treatment of data, and graphical techniques are emphasized. Prereq: Complcted or enrolled in Chem 335. Sem hrs: 3 fall.

Chem 346. Physical Chemistry II Lab. 1(2)
Laboratory experiments in chemical kinetics, atomic and molecular properties, surface and transport phenomena; spectroscopy and radiochemistry. The use of modern instrumentation and independcnce in designing and carrying out experiments is emphasized. Prereq: Chem 345; completed or enrolled in Chem 336. Sem hrs: 3 spring.

Chem 381. Chemistry of the Environment. 1(1)
Discussion of the nature, chemistry and alteration of the environment. Areas of study include atmospheric and water pollution, waste disposal, geochemistry, energy alternatives, and special topics of current or regional interest. Emphasis on understanding the chemical principles and reactions involved in protecting and improving our environment. Includes one half-day field trip. Final exam and report. Prereq: 1/C or 2/C standing. Sem hrs: 3 spring.

Chem 431. Theoretical Inorganic Chemistry. 1(1)
Theoretical approach to atomic structure, covalent bonding and molecular structure; ionic compounds; coordination chemistry to include organometallics; boron chemistry; transition metal chemistry and bio-inorganics; general survey of the periodic table. Inorganic synthesis. Final exam. Prereq: Chem 336. Sem hrs: 3 fall.

Chem 432. Systematic Inorganic Chemistry. 1(1)
Applications of Chem 431 with emphasis on a systematic study of the behavior of chemical elements and their inorganic compounds. Chemistry of transition metals, organometallics, boron, bio-inorganics, fluxional molecules, kinetics and mechanisms of inorganic reactions and special topics. Final exam. Prereq: Chem 431. Sem hrs: 3 spring.

Chem 433. Advanced Organic Chemistry. 1(1)
Structure of organic compounds including resonance, aromaticity, stereochemistry, conformation, and reactive intermediates. The relationship between structure and reactivity. Photochemistry. A discussion of reaction mechanisms and the means by which they are determined. Final exam. Prereq: Chem 234; Chem 336 or department permission. Sem hrs: 3 fall.

Chem 434. Biochemistry. 1(1)
Chemistry of the life processes including comparative biochemistry; chemical nature of biomolecules (carbohydrates, lipids, amino acids and proteins, nucleic acids and their components); energetics and metabolic control; enzymes; mechanisms and kinetics; intermediary metabolism; metabolism of nucleic acids and nitrogen containing compounds; biosynthesis and function of macromolecules including DNA, RNA, and proteins. Final exam. Prereq: Chem 234; Chem 336 or department permission. Sem hrs: 3 spring.

Chem 435. Advanced Physical Chemistry. 1(1)
Classical chemical thermodynamics. Extension of basic principles to real systems. Topics include gases, electrolytic and non-electrolytic solutions, surface systems, and galvanic cells. Final exam. Prereq: Math 351 recommended but not required; Chem 336. Sem hrs: 3 fall.

Chem 453. Instrumental Methods of Chemical Analysis. 1(2)
Advanced theory and application of modern analytical instruments for chemical analysis. Emphasis on theory as applied in laboratory instrumentation. Topics include ultraviolet, visible, infrared absorption and emission spectroscopies; nuclear magnetic resonance and electron magnetic resonance spectroscopy; X-ray methods; radiation methods; surface spectroscopies; mass spectrometry, chromatography; thermal methods; and electrochemical techniques. Final Exam. Prereq: Chem 336. Sem hrs: 3 fall.

Chem 495. Special Topics. 1(1)
Selected topics in chemistry. Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department (not more than 3 sem hrs).

Chem 499. Independent Study. 1(0)
Individual research under the direction of a faculty member. Includes use of chemical literature. No final. Prereq: Chem 244 and 345; department permission. Sem hrs: 3 fall or spring.

CIVIL ENGINEERING (Civ Engr)

Offered by the Department of Civil Engineering

Civ Engr 361. Fundamental Hydraulics. 1(1)
Application of the principles of incompressible fluid mechanics. Fluid properties, manometry, forces on submerged bodies, open channel flow, and conduit flow. Impulse-momentum and energy. Hardy-Cross method for balancing flows in water distribution systems, and storm sewer design. Final exam. Prereq: Engr 110. Sem hrs: 3 fall.

Civ Engr 372. Behavior and Analysis of Structures. 1(1)
Behavior and analysis of statically determinate and indeterminate beams, frames and trusses. Displacement calculations by moment area and virtual work. Consistent deformations, moment distributions and matrix techniques. Final exam. Prereq: Mech 210. Sem hrs: 3 spring.

Civ Engr 381. Engineering Measurements and Construction. 1(2)
Use of chain, level and transit for plane surveying. Construction as an industry, construction methods, equipment, materials and management techniques. The professional practice of engineering. Final exam. Sem hrs: 3 fall.

Civ Engr 392. Soil Mechanics. 1(2)
Engineering properties of soils, shear strength of cohesive and cohesionless soils, consolidation and settlement, stress distribution, lateral earth pressures on structures, bearing capacity; principles of foundation design. Soil laboratory. Final exam. Prereq: Mech 210. Sem hrs: 3 spring.

Civ Engr 454. Structural Dynamics. 1(1)
Behavior of materials and structures under dynamic loads. Response of single-degree-of-freedom systems with emphasis on numerical methods of analysis. Modeling and analysis of continuous structures as discrete systems. Design of structures for ground motions and air pressures. Final exam. Prereq: Civ Engr 471, Mech 320; completed or enrolled in Math 351. Sem hrs: 3 spring.

Civ Engr 461. Solar Energy Applications. 1(1)
Fundamentals of solar energy utilizaton. Includes forms of solar energy; heating and cooling demands for conventional structures; conservation techniques; systems to interface available energy with demand; refinements to improve system efficiency and cost effectiveness. Emphasis is on use of solar energy to supply heating demands. Final report. Prereq: Department permission, enrolled in or completed English 330. Sem hrs: 3 fall.

Civ Engr 462. Water Supply and Waste Disposal. 1(1)
Design of systems for treatment of water and wastewater. Discussion of water pollution parameters, and introduction to water supply problems. Major pollution parameters are discussed, and analysis techniques are demonstrated in class. The unit operations approach is used to present procedures for removing various pollutants from water and wastewater. Final exam. Prereq: Civ Engr 361. Sem hrs: 3 spring.

Civ Engr 463. Applied Wastewater Engineering. 1(2)
Fundamentals of aquatic ecology are reviewed. Special emphasis is placed on receiving stream management and sewage treatment plant design. Special topics include wastewater toxicity, stream assimilative capacity, stream standards, aeration, activated sludge, aerated lagoons, and anaerobic sludge digestion. Final report. Prereq: Civ Engr 462. Sem hrs: 3 fall.

Civ Engr 464. Civil Engineering Design. 1(2)
Individual or group design of civil engineering projects in the areas of structural, geotechnical, and environmental engineering. Projects may address structural steel design, reinforced concrete design, structural dynamics, soil dynamics, aerospace facilities design, environmental protection, architectural design, or air base master planning. Students are individually supervised but must formulate their own investigation techniques and conclusions. Final report. Prereq: 1/C standing; engineering or science major; department permission. Sem hrs: 3 fall or spring.

Civ Engr 471. Behavior and Design of Concrete Members. 1(1)
Material properties of concrete. Behavior and ultimate strength design of reinforced concrete beams, footings, columns and slabs. Design for flexure, shear, combined loadings, bond and anchorage, and deflections. Final exam. Prereq: Civ Engr 372. Sem hrs: 3 fall.

Civ Engr 472. Behavior and Design of Steel Members. 1(1)
Behavior and working stress design of structural steel beams, columns, and connections. Design for flexure, shear, deflections, tension, compression and combined loads. Design of bolted and welded steel connections. Introduction to plastic design of beams and frames. Final Exam. Prereq: Civ Engr 372. Sem hrs: 3 fall.

Civ Engr 473. Structural Design. 1(2)
Design of a multistory steel and reinforced concrete building, including structural frame, floor and wall system, and foundation. Determination of multistory structure design loads. Use of computer to determine internal forces. Final report. Prereq: Civ Engr 471; Civ Engr 472. Sem hrs: 3 spring.

Civ Engr 481. Air Base Engineering. 1(2)
Principles of planning, land use regulatory measures, design considerations for airport and aviation system facilities emphasizing the interface of the aviation system with the urban and natural environment. The viewpoint of the base commander is stressed. Technical inputs for base commander's analysis are handled by computer software. Topics include airspace criteria, geometric design of

airfield, zoning, noise abatement and pollution control. Final exam. Sem hrs: 3 spring.

Civ Engr 491. Foundation Engineering. 1(1)
Effects of soil conditions and the behavior of soils on foundation types. Analysis and design of footings, piles, retaining walls, sheet piling and slope stability. Final design report. Prereq: Civ Engr 392. Sem hrs: 3 fall.

Civ Engr 495. Special Topics. 1(1)
Selected topics in civil engineering. Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department (not more than 3 sem hrs).

Civ Engr 499. Independent Study. 1(0)
Individual study and research in an advanced civil engineering topic approved by the department head. Final report. Sem hrs: 3 fall or spring.

COMPUTER SCIENCE (Comp Sci)

Offered by the Department of Computer Science

Comp Sci 100. Introduction to Computer Science. 1(2)*
Introduction to algorithms, programs and computers. Principles and concepts designed to provide the basic knowledge and experience necessary to use computers effectively to solve problems. Problem analysis and preparation and execution of numerical and non- numerical programs for computer solution. Final exam. Sem hrs: 3 fall or spring.

Comp Sci 340. Structured FORTRAN for the Scientist/Engineer. 1(1)
Intensive programming using FORTRAN for scientific and engineering applications; problem solving utilizing top-down development and structured programming techniques; problem solving and modular programming; creation and manipulation of data files. Final project in cadet's major area. Prereq: Comp Sci 100. Sem hrs: 3 spring.

Comp Sci 351. Computer System Organization. 1(1)
Expands on basic computer logic systems by introducing and contrasting major types of computing system organizations. Treats instruction formats, languages, operating systems, and input/output within micro, mini, and maxi computer organizations. Final exam. Prereq: Comp Sci 100. Sem hrs: 3 fall or spring.

Comp Sci 359. Programming Languages. 1(1)
Basic concepts of programming languages; programming style; problem solving. Includes preparation of programs in several popular languages: Pascal, Ada, FORTRAN, COBOL, Word Processor Languages, LISP, etc. Final exam. Prereq: Comp Sci 100. Sem hrs: 3 fall.

Comp Sci 362. Computer Simulation. 1(1)
Theory of system modeling and computer simulation; simulation languages; queuing theory. Includes preparation of several computer programs and a group study of a real world problem. Final report. Prereq: Math 220; Comp Sci 100. Sem hrs: 3 fall or spring.

Comp Sci 380. Algorithms and Data Structures. 1(1)
Basic concepts of data; description, representation and manipulation of data structures; basic business data processing operations using strings, lists, inverted lists, and trees; file organization; data structures in programming languages; introduction to data management systems. Computer programs preparation and execution. Final project. Prereq: Comp Sci 359 or department permission. Sem hrs: 3 spring.

Comp Sci 453. Systems Analysis and Design I. 1(1)
First course of a two semester "capstone" sequence for Computer Science. Begins detailed study of system life cycle emphasizing user requirement analysis and workload analysis. Also studies generation of management and approval documents, budget process, site preparation, facility management, and architecture selection. Term project embodies main concepts. Final project. Prereq: Comp Sci 351, 380 and I/C standing. Sem hrs: 3 fall.

Comp Sci 454. Systems Analysis and Design II. 1(1)
Second course in the two semester "capstone" sequence. Continues study of system life cycle concentrating on system design, implementation and management. Includes the design, coding and testing of a significant software system with emphasis on documentation and standards. Final project. Prereq: Comp Sci 453. Sem hrs: 3 spring.

Comp Sci 463. Data Base Management. 1(1)
Basic concepts of Data Base Management and Data Base Management Systems (DBMS). Introduction to CODASYL terminology; techniques of data base design and manipulation using data definition, host interface, and self-contained inquiry languages; system analysis of current DBMS systems; computer program preparation and execution of a Data Base Management problem using a DBMS. Final project. Prereq: Comp Sci 380. Sem hrs: 3 fall.

Comp Sci 467. Computer Networks and Communication. 1(1)
Design and use of computer and terminal networks. Examines the field of communications technology through satellite communications. Course is organized around the study of network protocol layers. Air Force applications discussed. Final project. Prereq: Comp Sci 351, 359. Sem hrs: 3 fall or spring.

Comp Sci 473. Embedded Computer Systems. 1(1)
Examines requirements of processors, input/output, and digital to analog/analog to digital conversion in the digital control application area. Includes the study of digital sensors and devices, environmental hazards, digital filters and compensators, and process control. Also includes the structure and implementation of software designed for embedded computer systems using languages from assembly through Ada. Final project. Prereq: Comp Sci 351, 359. Sem hrs: 3 fall.

Comp Sci 474. Small Computers and Computer Graphics. 1(1)
Basic concepts of small computers, especially as they apply to computer graphics. Topics include architecture concepts, assembly language programming, interrupt handling, and I/O programming. Also examines interactive computer graphics including both vector and raster graphics. Topics include mathematics of geometric transformations, human engineering for interaction, graphics hardware architectures, and graphics software programming packages. Course includes several computer projects. Final project. Prereq: Comp Sci 351 and Comp Sci 380. Sem hrs: 3 spring.

Comp Sci 483. Operating Systems. 1(1)
Design of supervisors for large multiprocessing systems. Topics include virtual memory, resource management and allocation, concurrent processes, protection, file systems, batch and interactive subsystems. Final project. Prereq: Comp Sci 351, 359. Sem hrs: 3 fall.

Comp Sci 484. Programming Systems. 1(1)
Translators and interpreters for high-level programming languages. Program organization, grammars, scanners and recognizers. Design and construction of a syntax-directed compiler. Final report. Prereq: Comp Sci 351, 380. Sem hrs: 3 spring.

Comp Sci 495. Special Topics. 1(1)
Selected topics in computer science. Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department (not more than 3 sem hrs).

Comp Sci 499. Independent Study. 1(0)
Individual study and research supervised by a faculty member. Topic established with the department head. Final report. Sem hrs: 3 fall or spring.

ECONOMICS (Econ)

Offered by the Department of Economics

Econ 221. Principles of Microeconomics. 1(1)*
Introduction to microeconomics, with focus on the market economy of the United States. Includes analysis of demand, production, cost, constrained optimization, international trade, and economic issues that bear upon national security. An honors section of greater depth is offered. Final exam. Sem hrs: 3 fall or spring.

Econ 222. Principles of Macroeconomics. 1/2(1)*
Introduction to the macroeconomics, with applications to the U.S. economy. Includes analysis of national income determination and stabilization policies. An honors section of greater depth is offered. Final exam. Sem hrs: 1 1/2 fall or spring.

Econ 333. Price Theory. 1(1)
Traditional microeconomic theory emphasizing the principles of product and factor pricing, allocation and employment of resources, and the implications of various market structures. Investigates the usefulness of price theory in decision making. Final exam. Prereq: Econ 221 and 222. Sem hrs: 3 fall or spring.

Econ 347. Quantitative Economic Methods. 1 (1)
Analysis of economic problems through statistical and mathematical methods and the use of quantitative models. Final exam. Prereq: Econ 221, Econ 222, Math 220. Sem hrs: 3 fall.

Econ 351. Comparative Economic Systems. 1(1)
An examination of the theory and operation of modern economics. Theoretical and case study analysis of capitalism, market socialism, and command socialism. Final exam or final report. Prereq: Econ 222. Sem hrs: 3 fall.

Econ 356. Macroeconomic Theory. 1(1)
Analysis of national income, employment, price level determination, monetary, and fiscal policies. Contemporary macroeconomic issues are explored through the *Economic Report of the President*. Final exam. Prereq: Econ 222. Sem hrs: 3 spring.

Econ 374. Survey of International Economic Issues. 1(1)
Examination of current issues in the commercial relations among nations, including international trade, international finance, economic development, and the multinational enterprise. This course is designed for cadets who are not majoring in either economics or management. Final exam. Prereq: Econ 222. Sem hrs: 3 fall or spring.

Econ 422. Labor Economics. 1(1)
Supply and demand of labor, labor markets, mobility, unions, and wage structure. Particular attention is focused on defense implications. Final exam. Prereq: Econ 221. Sem hrs: 3 spring.

Econ 450. International Economics. 1(1)
Economic aspects of international relations, international trade, relationships among national currencies, international monetary systems, the balance of payments, and commercial policy. Final exam. Prereq: Econ 333. Sem hrs: 3 fall.

Econ 454. Soviet and Chinese Economic Policy. 1(1)
Analysis of the economic system of the Soviet Union and the Peoples Republic of China, with emphasis on the economic goals, policy objectives, strengths, weaknesses, and future prospects of each economy. Term paper. Prereq: Econ 221 and 222. Sem hrs: 3 spring.

Econ 465. Introduction to Econometrics. 1(1)
Application of statistical tools to economic data, concentrating on methodology, econometric model building, and statistical inference. Final exam. Prereq: Econ 222; Econ 347, Mgt 331, Math 358, or Pol Sci 349; or department permission. Sem hrs: 3 spring.

Econ 466. Seminar in Econometrics. 1(2)
Continues development of model building and analytical tools and stresses their application to economic problems. Final exam or final report. Prereq: Econ 465. Sem hrs: 3 fall.

Econ 473. Public Finance. 1(1)
Economics of the government sector, with emphasis on public goods, taxation, fiscal policy, and government regulation. Final exam or final report. Prereq. Econ 333 or department permission. Sem hrs: 3 fall.

Econ 475. Monetary Economics. 1(1)
Advanced treatment of money in the Keynesian and Monetarist models, with emphasis on theory, policy issues, and the operation of the Federal Reserve System. Final exam. Prereq: Econ 356 or department permission. Sem hrs: 3 spring.

Econ 478. Seminar in Defense Economics. 1(2)
An advanced course in economic analysis, applying macroeconomic and microeconomic theory to defense policy. Individual research is required. Final exam or final report. Prereq: Econ 333, I/C standing or department permission. Sem hrs: 3 spring.

Econ 495. Special Topics. 1(2)
Selected topics in economics of either an advanced treatment or general interest orientation. Final exam or final report. Sem hrs: 3 fall or spring.

Econ 499. Independent Study. 1(0)
Tutorial investigation of a specific area of economics. Final report. Sem hrs: 3 fall or spring.

ELECTRICAL ENGINEERING (El Engr)

Offered by the Department of Electrical Engineering

El Engr 210. Digital Signals and Systems. 1(1)*
An introduction to the principles of logic design. Includes Boolean algebra, combinational and sequential logic networks with basic design and analysis techniques, and an introduction to digital processing systems. Laboratory projects include the analysis and design of combinational and sequential networks and the analysis of integrated circuits as applied to digital computer architecture. Lab. Final exam. Prereq: Math 132. Sem hrs: 3 fall or spring.

El Engr 310. Electronic Circuits and Systems. 1(1)*
An introduction to electronic and electrical circuit, signal and system theory. Treats traditional topics as circuit parameters, electronic functions, and signal analysis. Includes time and frequency domain analysis. Emphasizes continuous as opposed to digital electronic systems. Concepts are applied to the study of Air Force electronic systems and weapons technology. Laboratory projects include work with integrated circuits. Lab. Final Exam. Prereq: El Engr 210; Physics 211. Sem hrs: 3 fall or spring.

El Engr 340. Circuit Analysis. 1(2)
An introduction to electrical circuit analysis. Basic definitions of voltage, current, power and energy are introduced along with circuit components, connection equations, and device relationships. Circuit analysis with these fundamental ideas is studied using both time-domain and frequency-domain (Laplace transform and sinusoidal-steady state) techniques. The Laplace transform is extended to include transfer functions which are used to analyze simple systems such as active operational amplifier filters. Lab. Final exam. Prereq: Completed or enrolled in El Engr 210 or Math 211 (210). Sem hrs: 3 fall or spring.

El Engr 341. Electronics I. 1(2)
Introduction to semiconductor electronics. Includes analysis of semiconductor devices such as the diode and transistor. Applications of devices in electronic circuits are covered with emphasis on the diode and transistor. Lab. Final exam. Prereq: El Engr 340 or department permission. Sem hrs: 3 fall.

El Engr 342. Electronics II. 1(2)
A continuation of El Engr 341. Covers the theory and application of semiconductor devices and integrated circuits with emphasis on principles of operation. Lab. Final exam. Prereq: El Engr 341. Sem hrs: 3 spring.

El Engr 346. Signal and System Analysis. 1(1)
Signal representation in terms of singularity functions and Fourier series. Representation and solution of continuous and discrete systems using classical methods such as convolution; transform techniques including Fourier transforms, Z transforms, and Laplace transforms; and state variable methods. Relationships between the various methods are developed. Lab. Final exam. Prereq: El Engr 340, Math 330. Sem hrs: 3 fall or spring.

El Engr 351. Laboratory Techniques. 0(0)
Practical application of electronic test equipment and laboratory techniques. Includes basic electrical measurements. Emphasis on the diode and transistor as circuit elements. Lab. Prereq: Enrolled in El Engr 341. Sem hrs: 1 fall.

El Engr 352. Electronics Laboratory. 0(0)
Practical application of semiconductor devices and integrated circuits. Emphasis on circuit construction and verification of device parameters. Lab. Prereq: Enrolled in El Engr 342. Sem hrs: 1 spring.

El Engr 360. Instrumentation Systems. 1(1)
Principles of modern data acquisition and instrumentation systems for non-electrical engineering majors. Includes measurement techniques, transducers, analog and digital data processing systems and displays. Lab. Final exam. Prereq: El Engr 310 or El Engr 340. Sem hrs: 3 fall or spring.

El Engr 380. Modern Logic Design. 1(2)
An intermediate course in the design of digital systems. Topics include a survey of modern logic families (DTL, RTL, TTL, CMOS), medium scale combinational and sequential circuits, state controllers, microprogramming, and central processor unit design. Lab. Final exam. Prereq: El Engr 210; El Engr 310 or El Engr 340. Sem hrs: 3 fall or spring.

El Engr 443. Electromagnetics. 1(2)
The study of Maxwell's Equations, plane waves, transmission, and radiating systems. Topics include wave propagation, transmission lines, waveguides, and antennas. Lab. Final exam. Prereq: Physics 311; Math 330 or department permission. Sem hrs: 3 fall or spring.

El Engr 447. Communications Systems. 1(1)
An introduction to modern electrical communications and information transfer from a systems viewpoint. Comparative performance of various modulation and detection methods are analyzed. Coverage includes theory of operation, effects of random noise, bandwidth constraints, and multiplex capabilities of analog transmission systems. Lab. Final exam. Prereq: El Engr 346. Sem hrs: 3 fall or spring.

El Engr 448. Digital and Data Communications. 1(1)
An introduction to digital and data communications systems. Emphasis is placed on theoretical analysis of digital communication systems and sub-systems in the presence of noise. Data communication protocols are introduced and analyzed. Lab. Final exam. Prereq: El Engr 346; Math 357. Sem hrs: 3 fall or spring.

El Engr 449. Introduction to Communication Transmission Systems. 1(1)
An introduction to long-distance communication transmission systems design. Current examples of microwave and optical systems are used for analysis and design. Emphasis is placed on the practical application of systems design fundamentals. Lab. Final exam and project. Prereq: El Engr 447. Sem hrs: 3 spring.

El Engr 452. Bioengineering. 1(1)
Application of engineering techniques, particularly those of electrical engineering, to the solution of biomedical engineering problems. Study of selected human physiological systems, e.g., circulatory system and nervous system; review of selected engineering principles (op amps, biopotential electrodes, etc.); and design of bioinstrumentation devices to monitor physiological events. Design project and final exam required. Prereq: El Engr 340 or El Engr 360 or departmental permission. Sem hrs: 3 fall or spring.

El Engr 464. Design. 1(1)
The integration of advanced concepts in electronics, instrumentation, signal processing, and microcomputer hardware with production and management methods as practiced in the USAF. Emphasis is placed on developing design techniques for the application of electrical engineering technology to defense problems. Lab. Final report. Prereq: Department permission. Sem hrs: 3 spring.

El Engr 465. Design Laboratory. 1(0)
The laboratory study of advanced concepts in electrical engineering technology to include metrology, manufacturing techniques, and the completion of a design project. Lab. Final project. Prereq: Enrolled in El Engr 464. Sem hrs: 1 spring.

El Engr 481. Introduction to Instrumentation Systems. 1(1)
An introduction to the analysis and design of modern data acquisition and instrumentation systems. Topics include transducers, displays, analog signal processing, sampling theory, and interfacing with computers. Lab. Final exam. Prereq: El Engr 342. Sem hrs: 3 fall or spring.

El Engr 482. Television Theory and Servicing. 0(1)
Illustrates principles of electronics as they are employed in a home television receiver. Theory includes the make-up of the composite television signal, reception, demodulation, and colorimetry. Laboratory exercises permit students to relate trouble symptoms to a particular section of the receiver. Lab. Prereq: El Engr 341. Sem hrs: 0 spring. (Note: This course carries no semester hour or course unit credit and will not satisfy any graduation requirement. Cadets enrolling must meet the requirements for an overload.)

El Engr 487. Real-Time Computation. 1(1)
An introduction to real-time computation using a microprocessor-based data acquisition system. Topics include structured system development, microprocessor instruction sets, support software, and hardware-software relationships and techniques. Lab. Final project. Prereq: El Engr 210 and department permission. Sem hrs: 3 fall.

El Engr 488. Microprocessor Systems. 1(2)
Analysis and design of dedicated microprocessor systems. Includes interfacing, computer architecture, design methodology and related laboratory techniques. Lab. Final exam. Prereq: El Engr 380; El Engr 487. Sem hrs: 3 spring.

El Engr 495. Special Topics. 1(1)
Selected topics in electrical engineering. Final project. Prereq: Department permission. Sem hrs and offering time determined by department (not more than 3 sem hrs).

El Engr 499. Independent Study. 1(0)
Individual study and research in an engineering design topic approved by the department head. Final paper and oral report. Prereq: Department permission. Sem hrs: 1 to 3 fall or spring.

ENGINEERING (Engr)

Offered by various departments and divisions as noted

Engr 110. Engineering Fundamentals. 1(2)*
Scalar approach to two-dimensional statics and dynamics to include the topics of equilibrium, stress and strain, trusses, bending, kinematics, Newton's second law, work-kinetic energy, and impulse-momentum with emphasis on the solution technique of problems encountered in the engineering sciences. Final exam or final design project. Prereq: Completed or enrolled in Math 132. (Administered by the Department of Civil Engineering.) Sem hrs: 3 fall or spring.

Engr 350. Linear Systems Analysis and Design. 1(2)
Analysis and design of linear systems. Includes modeling of electrical and mechanical systems; characterization of physical systems using linear, constant-coefficient differential equations; Laplace Transform techniques; identification of system response using frequency response and Bode plots; specification of design criteria in the s-domain; and modification of system parameters to satisfy design requirements. Analog computer programming is taught and the analog computer is used for analysis and design. Lab. Final project. Prereq: Physics 211, completed or enrolled in El Engr 310 or El Engr 340. (Administered by the Department of Astronautics.) Sem hrs: 3 fall or spring.

Engr 351. Aerospace Engineering Techniques. 1(1)
Computer and mathematical techniques required in aerospace engineering. Tutorial and self-paced study is used to teach FORTRAN. Analytical methods in dynamics, coordinate systems, and linear algebra. Use of computers and applications of numerical techniques to aerospace problems. Final exam. Prereq: Math 211; Comp Sci 100. (Administered by the Department of Astronautics.) Sem hrs: 3 fall or spring.

Engr 400H. Divisional Honors Seminar. 1(1)
An interdisciplinary study of engineering concepts, with emphasis on applications of fundamental principles. Includes case study, research, preparation and presentation of at least one major paper. Term paper or final project. Prereq: First Class Honors Degree candidate or permission of the division chairman. Sem hrs: 3 spring.

Engr 402. Professional Engineering Development. 0(1)
Review of mathematics, chemistry, physics, and engineering sciences in preparation for the Colorado Engineer-in-Training examination. Taking the exam is optional at end of course. Prereq: 1/C standing; Basic or Engineering Science major. (Administered by Department of Civil Engineering.) Sem hrs: 0 spring.

Engr 430. Engineering Systems Design. 1(1)
Application of the various engineering disciplines to overall systems analysis and design. Includes introduction and application of the Air Force systems acquisition process in completing a design project. Design projects include attention to economic and management aspects of the systems design process. Prereq: Aero 311; Aero 312; Comp Sci 100; El Engr 310/340; Mech 210; Astro 332, if possible. (Administered by the Department of Astronautics with instructors from all Engineering Science Departments.) Final report and briefing. Sem hrs: 3 fall and spring.

ENGLISH (English)

Offered by the Department of English

English 001. English as a Second Language. 1(0)
A course for fourthclass allied students and other students for whom English is a second language to increase oral and written competencies requisite for completion of English

111 and 212. Pass/fail grades to be entered on student's transcript. Prereq: Validation credit for foreign language or department permission. No final. Noncredit. Sem hrs: 0 summer, fall, and spring.

English 110. Fundamentals of English. 1(2)
A course for students who need a review of the fundamentals of correct written expression. Frequent written exercises in mechanics are reinforced in the context of the paragraph. Introduction to short essay structure. Successful completion satisfies requirement for English 111. Final exam. Sem hrs: 3 fall.

English 111. English Composition. 1(1)*
Frequent practice in writing responses to various situations, including one paper supported by research. Class discussions focus on writing samples produced by the students. Honors sectioning for advanced students. Sem hrs: 3 fall or spring.

English 212. Composition and Speech. 1(1)*
A course in informative and persuasive communication which combines intermediate-level writing with basic instruction in public speaking. In a workshop atmosphere, students focus on rhetorical patterns of development as ways of inventing, arranging, and expressing ideas. Frequent writing exercises and speaking performances allow students to improve the quality of their ideas and communicative skills. Honors sectioning for advanced students. Prereq: English 111. Sem hrs: 3 fall or spring.

English 330. Technical Writing. 1(1)*
A course emphasizing both the theory and practice of writing about science for diverse audiences. Students learn how to research and document both scientific and engineering literature. And they discover how to incorporate graphs, tables, drawings, and technical data in their reports. Students write papers using extended definitions, descriptions of mechanisms and processes, and state-of-the-art data from their own technical fields of interest. Liaison Officers from the science and engineering departments work with the students to guide their research toward a final major report. Then the students present briefings on those projects. Honors sectioning for advanced students. Prereq: English 212. For students with majors from the Divisions of Engineering Sciences and Basic Sciences; 2/C standing. Sem hrs: 3 fall or spring.

English 350. Advanced Composition. 1(1)*
Practical workshop approach emphasizes advanced writing techniques. Varied readings in American literature aid in the recognition of style and the student's development of his or her own style. Public speaking and military writing are also included. Frequent written exercises develop skills in audience analysis and effective style, and stress proper execution of advanced writing projects. Honors sectioning for advanced students. Prereq: English 212. For students with majors from the Divisions of Humanities and Social Sciences; 2/C standing. Sem hrs: 3 fall or spring.

English 353. Shakespeare. 1(1)
Intensive study of Shakespeare's poetry and major plays within the cultural and historical perspectives of Renaissance England. Cadets attend a stage production of one play when available. Designed for non-humanities majors as well. Final exam. Prereq: English 111. Sem hrs: 3 fall or spring.

English 360. Classical Masterpieces: Homer to Milton. 1(1)
A tutorial course that introduces the student to the great myths underlying our notion of the heroic and the romantic. We read chiefly epics and romances from the beginnings of European literature to the seventeenth century, including such works as the *Iliad*, *Oedepus Tyrannus*, *Aeneid*, *Quest of the Holy Grail*, *The Divine Comedy*, and *Paradise Lost*. We examine ways in which epic themes and motifs have been imitated over the centuries, how one poet has influenced those who followed him. Final exam. Prereq: English 111. Sem hrs: 3 fall or spring.

English 370. Advanced Speech. 1(2)
Instruction and practice in public address, including informative, argumentative, and persuasive speaking. Emphasizes a workshop approach with individual coaching; frequent audio and video-taping sessions. Open to all cadets. No final. Prereq: English 212. Sem hrs: 3 fall or spring.

English 373. The Novel Today. 1(1)
A survey of twentieth-century novels by such authors as Faulkner, Hemingway, Vonnegut, Joyce, Woolf, Graham Greene, Fowles, and Solzhenitsyn. Students examine structure and social content to discover how the novel has developed into the dominant literary form of the twentieth century. Final exam. Prereq: English 111. Sem hrs: 3 fall.

English 406. Values in Literature. 1(1)*
Unlike a conventional literature course that might study how novels are constructed, this course examines what works of literature say about a culture's values. Works from earlier centuries lend historical perspective to novels, plays, poems, and short stories of the twentieth century. Major assignments include two papers on questions of values arising from the readings. At the discretion of the department head, a very few highly qualified cadets may be allowd to fulfill this core requirement by taking either Fine Art 451 or Fine Art 458. Honors sectioning for advanced students. Final exam. Prereq: English 212. Sem hrs: 3 fall or spring.

English 460. Major British Authors. 1(1)
A survey of the best prose, poetry, and drama of the British Isles, from the *Beowulf* poet and Chaucer to George Bernard Shaw, James Joyce, and John Fowles. This course emphasizes the continuity of the English literary tradition, as well as the lasting excellence of its classic works. Final exam. Prereq: English 111. Sem hrs: 3 fall or spring.

English 471. American Literature I: Beginnings to Naturalism. 1(1)
A survey of American fiction, poetry, drama, and prose by such authors as Jefferson, Irving, Poe, Hawthorne, Melville, Whitman, Twain, and Dickinson. Final exam. Prereq: English 111. Sem hrs: 3 fall.

English 472. American Literature II: Naturalism to the Present. 1(1)
A continuation of the survey of American fiction, poetry, drama, and prose by such writers as Robinson, Eliot, Frost, O'Neill, Fitzgerald, Faulkner, Hemingway, Wright, and selected contemporary authors. Final exam. Prereq: English 111 (English 471 recommended). Sem hrs: 3 spring.

English 475. Creative Writing. 1(1)
A course in which the students can try their hand at creative writing, normally poetry or short fiction. The class is conducted as a workshop with the students' own work becoming the center of discussion and attention. Final project: Students to present their own best work. Prereq: English 111. Sem hrs: 3 fall or spring.

English 484. Literature of War. 1(1)
Approaches issues raised by war and military life through selected readings on war from Homer and the Bible to the present. Typical central topics include The Soldier as Hero or Anti-hero, Types of Leadership, or the Literature of Flight. Final exam. Prereq: English 111. Sem hrs: 3 spring.

English 495. Special Topics. 1(1)
Selected topics in English. Previous topics have included black literature, detective fiction, literature of the supernatural, and science fiction, which is usually taught in the fall of odd-numbered years. Fall 1983 offering: Science Fiction. Spring 1984 offering: Detective Fiction. Prereq: English 111, Sem hrs: 3 fall or spring.

English 499. Independent Study. 1(0)
Study and research in literature, composition, or creative writing for students who have demonstrated their ability for advanced study in regularly offered enrichment courses and for whom an appropriate enrichment course does not exist. Topics and meetings arranged with the instructor. Final report. Prereq: Department permission. Sem hrs: 3 fall or spring.

Area Stu 351. The American Identity. 1(1)
Interdisciplinary course. Considers the origins, development, and nature of the American experience. Unifying topics may include the American Dream or American Regionalism. Readings, reports, and projects incorporate the views and methodology of literature, law, philosophy, history, folklore, music, art, geography, political science, economics, and social science. Seminar approach. Final exam. Prereq: English 111. Sem hrs: 3 fall.

FINE ARTS

Offered by the Department of Philosophy and Fine Arts

Fine Art 451. Introduction to the Visual Arts. 1(1)
A discussion and analysis of art concepts, artists and styles. Emphasis on developing individual potential for aesthetic and creative experiences. Includes a brief survey of the evolution of art, the philosophy of art, an examination of various media, and studio projects in painting and sculpture. Artistic ability or prior knowledge of art are not required. Field trip to the Denver Art Museum. This course may fulfill English 406 core requirement with permission of the English department head. Final exam. Sem hrs: 3 fall or spring.

Fine Art 458. Music Appreciation. 1(1)
Survey of music of the Western world and a study of basic elements, forms, and styles in representative works by major composers. Emphasis on listening, understanding, and appreciation. Field trip to an area concert. Knowledge or talent in music not required. Final exam. Sem hrs: 3 fall or spring. This course may fulfill English 406 core requirement with the permission of the English department head.

Fine Art 460. Fine Arts Studio. 1(2)
This course will help students improve their ability to explore design, printing, painting and sculpture. After initial projects in graphics, drawing, woodcut and etching, students select projects in acrylics, oils, synthetics, wood, stone, or bronze. Prior experience is not required. Emphasis is on student creativity and responsibility. No final. Prereq: Fine Art 451, Fine Art 477, or department permission. Sem hrs: 3 spring.

Fine Art 477. American Art and Music. 1(1)
An historical survey which considers American aspects of music and art, with reference to visual and aural communication, regional and national means of expression, and the influence of American currents of thought on specific periods and individual styles, including contemporary artists and composers. Knowledge or ability in music or art is not required. Field trip to area concert or museum. Final exam. Sem hrs: 3 fall.

Fine Art 495. Special Topics. 1(1)
Selected special topics in Fine Arts. Final exam or final report. Sem hrs: 3 fall or spring.

Fine Art 499. Independent Study. 1(0)
Independent study in art or music. Subject and meetings arranged with the instructor. No final. Prereq: For visual art, Fine Art 451 and Fine Art 460 plus department permission; for music, Fine Art 458 and department permission. Sem hrs: 3 fall or spring.

FOREIGN LANGUAGES (For Lang)

Offered by the Department of Foreign Languages

For Lang 131-132. 1-1/2 (2-1) or 1/2-1 (1-2) (See supplemental information)

Arabic 131-132	**Basic Arabic**	**1-1/2 (2-1)**
Chinese 131-132	**Basic Chinese**	**1-1/2 (2-1)**
French 131-132	**Basic French**	**1/2-1 (1-2)**
German 131-132	**Basic German**	**1/2-1 (1-2)**
Japanese 131-132	**Basic Japanese**	**1-1/2 (2-1)**
Russian 131-132	**Basic Russian**	**1-1/2 (2-1)**
Spanish 131-132	**Basic Spanish**	**1/2-1 (1-2)**

Basic foreign language study with emphasis on communicative skills, drills in grammar and structure. Introduction of aural/reading comprehension and contemporary culture and civilization of language studied. Students are placed in course on basis of placement examination scores. Final exam both semesters. Must be taken sequentially. Sem hrs: For Lang 131 - 3 or 1-1/2 fall; For Lang 132 - 1-1/2 or 3 spring. (See supplemental information for additional details.)

For Lang 141-142. 1-1/2 (2-1)*

French 141-142	**Accelerated Basic French**
German 141-142	**Accelerated Basic German**
Spanish 141-142	**Accelerated Basic Spanish**

Accelerated basic foreign language study with emphasis on communicative skills. Drills in grammar and structure. Introduction of aural/reading comprehension and contemporary culture and civilization of language studied. Students are placed in course on basis of placement examination scores. Final exam both semesters. Must be taken sequentially. Sem hrs: For Lang 141 - 3 fall; For Lang 142 - 1-1/2 spring. (See supplemental information for additional details.)

For Lang 150. 1(2)

French 150
German 150
Spanish 150

One-semester basic foreign language study with emphasis on communicative skills and development of aural/reading comprehension. Introduction to contemporary culture and civilization of language studied. Students are placed into course on basis of placement examination scores. Final exam, fall semester only. Sem hrs: 3, with 1-1/2 semester hours validation upon successful completion.

For Lang 221. 1(1)

Arabic 221	**Intermediate Arabic I**
Chinese 221	**Intermediate Chinese I**
French 221	**Intermediate French I**
German 221	**Intermediate German I**
Japanese 221	**Intermediate Japanese I**
Russian 221	**Intermediate Russian I**
Spanish 221	**Intermediate Spanish I**

Review of grammar and structure of target language with emphasis on grammatical and syntactical accuracy in both speech and writing. Intensification of aural and reading comprehension. Student talks and classroom discussions based on selected readings in culture and civilization of language studied. Language laboratory supplements classroom instruction. Final exam. Prereq: Successful completion of For Lang 132 or 142 or 150, or department permission. Sem hrs: 3 fall. (French, German, and Spanish 221 will be offered both fall and spring semester.)

For Lang 222. 1(1)

Arabic 222	**Intermediate Arabic II**
Chinese 222	**Intermediate Chinese II**
French 222	**Intermediate French II**
German 222	**Intermediate German II**
Japanese 222	**Intermediate Japanese II**
Russian 222	**Intermediate Russian II**
Spanish 222	**Intermediate Spanish II**

Continuation of essential elements of language structure. Emphasis on conversational practice and aural comprehension of contemporary spoken language. Student talks and classroom discussions based on culture and civilization readings/topics in target language. Language laboratory supplements classroom instruction. Final exam. Prereq: Successful completion of For Lang 221 or department permission. Sem hrs: 3 spring. (French, German, and Spanish 222 will be offered both fall and spring semesters.)

For Lang 223. 1(1)

Arabic 223	**Intermediate Arabic III**
Chinese 223	**Intermediate Chinese III**
French 223	**Intermediate French III**
German 223	**Intermediate German III**
Japanese 223	**Intermediate Japanese III**
Russian 223	**Intermediate Russian III**
Spanish 223	**Intermediate Spanish III**

Continuation of essential elements on language structure. Emphasis of reading comprehension/translation based on scientific and social science reading materials in contemporary target language. Intensification of grammatical syntactical accuracy in writing. Course is designed to develop a facility for using language studied as a research tool. Final exam. Prereq: Successful completion of For Lang 222 or department permission. Sem hrs: 3 fall or spring.

For Lang 365. 1(1)

Arabic 365	**Advanced Arabic**
Chinese 365	**Advanced Chinese**
French 365	**Advanced French**
German 365	**Advanced German**
Japanese 365	**Advanced Japanese**
Russian 365	**Advanced Russian**
Spanish 365	**Advanced Spanish**

Oral discussion of issues in the civilization and culture of the country or countries concerned based on selected readings in the target language. Final exam. Prereq: Successful completion of For Lang 223 or department permission. Sem hrs: 3 fall or spring.

For Lang 376. 1(1)

French 376	**Contemporary Literature**
German 376	**Contemporary Literature**
Spanish 376	**Contemporary Literature**

Study of important writers, their works, and influences on their societies. Final exam. Prereq: For Lang 365 or department permission. Sem hrs: 3 fall or spring.

For Lang 491. 1(1)

French 491. French AFA Preparation I
Intensive program in French for prospective candidates for the French Air Force Academy Exchange Program. Designed to provide required fluency in advanced conversation and reading/translation (with special emphasis on scientific texts). Final exam. Prereq: French 223 (255) or department permission. Sem hrs: 3 spring.

For Lang 492. 3(0)

French 492. French AFA Preparation II
Continuation of French 491. Intensive program stressing everyday conversation and scientific vocabulary. Includes advanced composition, translations and development of note-taking skills in the language. Final exam. Prereq: French 491 and nomination by the Dean of the Faculty for participation in the French Air Force Academy Exchange Program. Sem hrs: 8 summer only.

For Lang 495. Special Topics. 0-2(1)
Selected topics in foreign languages. Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department.

For Lang 499. Independent Study. 1(0)
Individual study or research conducted on a tutorial basis. Study may be in any of the seven languages offered by the department. Topic or area of study/research must be approved by the department head. Final exam and/or term paper. Sem hrs: 3 fall or spring.

Supplemental Information.
All cadets who have a background in one of the foreign languages offered at the Academy will be administered a placement examination upon arrival at the Academy. Based on the results of that examination, a cadet may:

1. Receive validation credit for the core language requirement (4 1/2 sem hrs) or:

2. Be placed into the basic course sequences (For Lang 131 or 141) and required to take 4 1/2 sem hrs of foreign language study.

3. Be placed into For Lang 150 for 1 semester (3 sem hrs credit) and given validation credit for 1-1/2 sem hrs. Cadets without prior language background will be placed into For Lang 131 (Elementary Basic Sequence) of the language of their choice. Cadets with one or two years of previous study of the language will normally be placed into For Lang 141 (Accelerated Basic Sequence); those with two or more years will be placed into For Lang 150.

For Lang 131-132 will meet every other day as follows:

	Fall	Spring
Arabic	**2 hrs**	**1 hr**
Chinese	**2 hrs**	**1 hr**
French	**1 hr**	**2 hrs**
German	**1 hr**	**2 hrs**
Japanese	**2 hrs**	**1 hr**
Russian	**2 hrs**	**1 hr**
Spanish	**1 hr**	**2 hrs**

For Lang 141-142 will meet every other day as follows:

French	**2 hrs**	**1 hr**
German	**2 hrs**	**1 hr**
Spanish	**2 hrs**	**1 hr**

GEOGRAPHY (Geog)

Offered by the Office of Instruction for Geography

Geog 320. Principles of Geography. 1(1)
Geographic analysis of major world regions applying principles of physical and cultural geography. Comparison of regional associations evolving from the synthesis of man's natural and cultural environment. Final exam. Sem hrs: 3 fall or spring.

Geog 340. Cartography. 1(2)
An introduction to concepts and methods of cartography. Includes reference systems, map projections, grids, map compilation, computer and statistical maps. Lab required. Final exam or final project. Sem hrs: 3 fall.

Geog 342. Analytical Techniques in Geography. 1(1)
Examines techniques in spatial analysis to include quantitative and cartographic methods. Specific problems representative of various subfields of geography are analyzed. Directs the cadets in the preparation of a research proposal using the "scientific method." Final exam. Prereq: Geography major or department permission. Sem hrs: 3 spring.

Geog 350. Cultural Geography. 1(1)
A geographic analysis of cultural factors affecting the nature and distribution of population, settlements, and economic patterns. The processes of cultural change are examined. Final exam. Sem hrs: 3 spring.

Geog 352. Climatology. 1(1)
An analysis of the parameters governing the distribution of and the dynamic processes that control the earth's regional climates. Focuses on applied climatology. Final exam. Sem hrs: 3 fall.

Geog 353. Physical Geography. 1(1)
An analysis of the dynamic processes, distribution and structure of the earth's physical features. Focuses on fundamental concepts of physical geology, geomorphology, climate, soils and vegetation. Includes local field trips. Final exam. Sem hrs: 3 spring.

Geog 370. Political Geography. 1(1)
Analysis of the spatial structure and processes of political systems at various levels of government. Examines geographic problems and processes of politically organized space including nationalism, development, and acquisition of natural resources. Final exam. Sem hrs: 3 spring.

Geog 372. Economic Geography. 1(1)
Examines the physical, political, and demographic environments as they relate to the location of economic activity. Emphasizes contemporary industrial and commercial development theory. Final exam. Sem hrs: 3 fall.

Geog 382. Geographic Application of Imagery Analysis. 1(2)
Principles and employment of remote sensing systems using the visible and non-visible portions of the electromagnetic spectrum; rectification of imagery for detailed landform analysis; application of imagery to cultural and physical geography. Case studies and class projects focus on direct application of empirical data. Lab required. Final exam or project. Sem hrs: 3 spring.

Geog 471. Western Europe and the Mediterranean. 1(1)
Geographical analysis of the physical and cultural aspects of Western Europe and the Mediterranean. Emphasis on the urban character of Europe and the region's interrelationships. Discussion of European political, economic, and cultural ties. Final exam. Sem hrs: 3 fall.

Geog 472. USSR and Eastern Europe. 1(1)
Geographic analysis of the physical, cultural and economic base of the Soviet Union and Eastern Europe. Topical analyses include assessment of the environmental base, nature and extent of resource utilization, and spatial interaction. Final exam. Sem hrs: 3 spring.

Geog 475. Geography of the Developing World/ East Asia and Latin America. 1(1)
Geographic analysis of the physical and cultural landscapes of selected regions of the developing world. Investigates the regional distribution of resources, economic structure, industrial strength, and settlement patterns. Focuses on problems of population growth, cultural divergence, social and political instabilities. Latin America in odd-numbered years and Far East in even-numbered years. Final exam. Sem hrs: 3 fall.

Geog 491. Seminar on Basis of Geographic Thought and Research. 1(1)
Examines the development of geographic thought. Investigates changes in research tools and techniques over time. Includes an extensive exposure to the "scientific method." Directs the student in completing a substantive, empirical research report. Field research or its equivalent required. Final exam. Prereq: Department permission. Sem hrs: 3 fall.

Geog 495. Special Topics. 1(1)
Selected topics in geography. Final exam or final report. Semester hours and offering time determined by department (not more than 3 sem hrs).

Geog 499. Independent Study. 1(0)
Independent research and study in specific area of geography conducted on a tutorial basis. Research paper or final project. Prereq: Department permission. Sem hrs: 3 fall or spring.

HISTORY (History)

Offered by the Department of History

History 101. Modern World History. 1(1)*
Surveys major pre-modern civilizations and examines the development and diffusion of modern culture throughout the world in the nineteenth and twentieth centuries. Emphasizes the interaction of traditional and modern cultures. Final exam. Sem hrs: 3 fall or spring.

History 202. Modern Warfare and Society. 1(1)*
Survey of the complex relationship between warfare and society from the American and French revolutions through the Arab-Israeli wars. The role of the military leader, the impact of technology, the evolution of military doctrine, and the development of air warfare are related to the changing character of warfare. Final exam. Prereq: History 101. Sem hrs: 3 fall or spring.

History 303. The United States in a Changing World: Critical Issues. 1/2(1x)
Examines the historical development of selected critical issues confronting contemporary American society. Issues considered include the role of minorities in American life, the impact of industrialization, the expansion of the role of the federal government, and America's response to crucial world problems. Final exam. Prereq: History 101 and 202. Sem hrs: 1 1/2 fall or spring.

History 330. Historical Methods. 1(1)
Introduction to methods of advanced historical research and writing. Analysis of major issues in historiography. Final exam. Prereq: Completed or enrolled in English 350 or department permission. Sem hrs: 3 fall or spring.

History 332. History of U.S. Foreign Relations. 1(1)
Emphasizes the growth and transformation of the U.S. from a small and weak nation into an industrial giant on the world scene. Relates the process by which the U.S. assumed, rejected, and finally accepted the role of a major world power and its associated problems. Examines the objectives and policies of interest groups in determining the nature of the nation's relations with foreign countries. Prereq: History 101. Final exam. Sem hrs: 3 fall.

History 335. Regional History of the United States. 1(1)
Traces America's transition from a rural to an urban society and focuses on unique regional contributions to national development. Each year the course focuses on a different specific region: The West (84), the South (85), and Urban History (86). When the history of the American West is offered, a field trip to a major historical site or museum connected with the settling and development of the West will be scheduled. Prereq: History 101. Sem hrs: 3 fall.

History 341. History of Latin America. 1(1)
The discovery, conquest, and growth of Spanish and Portuguese America. Emphasizes political, social, economic, and cultural institutions since the wars of independence with particular stress on twentieth century problems. Final exam. Prereq: History 101. Sem hrs: 3 spring.

History 343. History of East Asia. 1(1)
Emphasis on China and Japan since the coming of the Western powers. The course examines: fundamental cultural traditions; the political, social, and economic results of nineteenth and twentieth century relationships with Western powers; and the origins of contemporary issues in East Asia. Final exam. Prereq: History 101. Sem hrs: 3 spring.

History 344. Medieval and Early Modern European History. 1(1)
Traces political, social, economic, intellectual, and military developments in Europe from the classical era to the eighteenth century. Emphasis on the Middle Ages, the Renaissance and Reformation, and the Age of Absolutism. Final exam. Prereq: History 101. Sem hrs: 3 fall.

History 345. Modern European History. 1(1)
Examines the political, social, economic, intellectual, and military history of Europe from the eighteenth century to the present. Emphasis on the French Revolution, the industrial revolution, nationalism and socialism in the nineteenth century, European imperialism, the era of two world wars, and contemporary developments. Final exam. Prereq: History 101. Sem hrs: 3 fall or spring.

History 346. History of Russia. 1(1)
Survey of Russian domestic and foreign affairs from the ninth century to the present Soviet regime. Emphasis on political, social, economic, and cultural developments since 1801. Final exam. Prereq: History 101. Sem hrs: 3 fall.

History 363. Unconventional Warfare. 1(1)
Surveys the evolution, theory, and practice of insurgent and revolutionary warfare throughout the world from the seventeenth century to the present. Special attention given to Southeast Asia. Examines counterinsurgency operations in various areas and circumstances. Final exam. Prereq: History 202. Sem hrs: 3 spring.

History 368. Twentieth Century Warfare. 1(1)
A study of the nature of modern warfare through the detailed examination of a single war. Alternately deals with one of three representative twentieth century wars: Vietnam War (84), the Arab-Israeli Wars (85) and World War II (86). Each war is treated in specific detail--its causes and military strategies, economic and social implications, leadership, alliances, technology and doctrine, and its results--with the primary objective of gaining a clearer understanding of the complex nature of modern warfare. Final exam. Prereq: History 202. Sem hrs: 3 spring.

History 371. Air Power and Modern Warfare. 1(1)
History of the air weapon with primary emphasis on leadership and tactics as they evolved during the twentieth century. Covers both the United States and Europe, stressing the constant interplay between personalities, institutions, theories, technology, combat experience, and evolving doctrine. Final exam. Prereq: History 202. Sem hrs: 3 fall.

History 372. History of the Middle East and North Africa. 1(1)
Introductory survey of historical developments in the Middle East and North Africa from ancient Sumer to the present. Emphasis on the classical empires of the Near East, the triumph of Islam, the dominance of the Ottoman Empire in the sixteenth and seventeenth centuries, western impact since the French Revolution, independence movements in the twentieth century, and contemporary trends and problems. Final exam. Prereq: History 101. Sem hrs: 3 fall.

History 382. Science, Technology, and Warfare. 1(1)
Investigates the impact of science and technology on the character of warfare. Stresses the effects of science and technology on weaponry, doctrine, strategy and tactics: Special consideration is given to the problems of adopting new weapons and the relative importance of technology to military success. Final exam. Prereq: History 101 and 202. Sem hrs: 3 fall.

History 457. History of Military Thought. 1(1)
Historical investigation of the ideas of selected major military thinkers from the time of Machiavelli to the present. Emphasis is on those writers whose impact on evolving strategy and doctrine, whether on land, sea, or in the air, has been most far-reaching. Final exam. Prereq: History 202. Sem hrs: 3 fall. Concurrent enrollment in PMS-440 desirable.

History 480. History of the American Way of Life. 1(1)
Examines the social and cultural evolution of the American way of life. Stresses the impact of the industrial revolution in the nineteenth century and America's rise to world power in the twentieth century. Special consideration given to the unique experiences of racial, religious, and ethnic minorities. Final exam. Prereq: History 303. Sem hrs: 3 spring.

History 494. The American Way of War. 1(1)
Treats America's wars and warriors from Bunker Hill to Linebacker II. Primary attention is on how Americans have fought their wars. Also considered are why America went to war, the raising of armed forces, and the reactions to the effects of war. Particular emphasis is given to the role of leadership, both civil and military. Final exam. Prereq: History 202; 1/C standing or department permission. Sem hrs: 3 spring.

History 495. Special Topics. 1(1)
Selected topics in history. Final exam/final report. Prereq: History 101. Sem hrs: 3 fall or spring.

History 499. Independent Study. 1(0)
Reading and research in any recognized area of historical study. Areas selected by instructor depend on student interest. Term paper. Prereq: Department permission. Sem hrs: 3 fall or spring.

HUMANITIES (Hum)

Offered by the Departments of English and Foreign Languages.

Hum 400H. Humanities Honors Seminar 1(1)
Interdisciplinary course. Provides special opportunities for superior students to bring together and relate diverse ideas, periods, and movements in art, history, language, literature, music, and philosophy of a range and depth commensurate with their abilities. Report and final exam. Prereq: First Class Honors Degree candidate or permission of the division chairman. Sem hrs: 3 fall or spring.

Hum 461. Russian Literature. 1(1)
A study of representative Russian authors (such as Pushkin, Chekhov, Dostoevsky, Tolstoy, Sholokhov, Pasternak, and Solzhenytsyn) in their historical and cultural setting and their impact on the shaping of the national character of the Russian people. Final exam. Sem hrs: 3 spring.

Hum 463. Far Eastern Literature. 1(1)
An historical survey and analysis of major literary works of the Far East with emphasis on China and Japan. Final exam. Sem hrs: 3 spring.

INSTRUCTIONAL TECHNOLOGY (Inst Tch)

Offered by the Directorate of Audiovisual Services.

Inst Tch 101. Reading Improvement. 0(1)
Improvement of reading skills to include general rate increases while maintaining and improving comprehension levels, as well as proper reading approaches in the content areas. Final exam. Sem hrs: 1/2 fall.

Inst Tch 102. Basic Typing. 0(1)
Basic typing limited to skills needed for theme, report, and military/personal correspondence typing. Final exam. Pass/fail. Sem hrs: 1/2 fall.

LAW (Law)

Offered by the Department of Law

Law 300. An Introduction to Law. 1(1)*
An introduction to the judicial process and legal reasoning. Examines the nature, history and functions of law and its application in contracts, properties, torts, and constitutional rights. Final exam. Prereq: At least 3/C standing and Pol Sci 201. Sem hrs: 3 fall or spring.

Law 400. Law for Commanders. 1(1)*
A survey of the legal principles encountered by officers in their official and personal capacities, including crimes, evidence, military justice, administrative law, standards of conduct, problems of command, laws of war, and personal estate planning. Final exam. Prereq: Law 300 and 1/C standing. Sem hrs: 3 fall or spring.

Law 451. American Constitutional Law. 1(1)
An inquiry into legal problems arising from the U.S. Constitution. Examines the courts' role in limiting federal and state power and in protecting individuals against unconstitutional governmental activity. Final exam. Prereq: Pol Sci 201 and 1/C or 2/C standing. Sem hrs: 3 fall.

Law 461. International Law. 1(1)
The role of international law in the decision-making process of sovereign nations. Topics include the law of the sea, airspace, space, sovereign immunity, the legal status of military personnel stationed abroad, and the use of force by nations. Final exam. Prereq: 1/C or 2/C standing. Sem hrs: 3 fall.

Law 462. Government Contract Law. 1(1)
Comprehensive study of government contract law with emphasis given to basic legal principles, procurement policy, methods of procurement, types of contracts, contract clauses, taxation, regulation, social and economic provisions, disputes procedures, default remedies and terminations. Final exam. Prereq: Law 300; 1/C or 2/C standing. Sem hrs: 3 spring.

Law 495. Special Topics. 1(1)
A seminar on the legal implications of contemporary social, economic, and political problems and the ability of the American legal system to solve those problems. Final report. Prereq: 1/C or 2/C standing and department permission. Limted enrollment. Sem hrs: 3 spring.

MANAGEMENT (Mgt)

Offered by the Department of Management

Mgt 203. Introduction to Management. 1/2(1x)*
Introduction to the principles and techniques of planning, organizing and controlling. Theoretical concepts with applications to the needs of both cadet managers and future Air Force officers. Case studies and experential problems. Final exam. Prereq: Concurrent enrollment in Econ 202/222 (for scheduling). Sem hrs: 1 1/2 fall or spring.

Mgt 331. Statistical Decisions in Management. 1(1)
A problems and applications orientation, emphasizes material useful to an Air Force officer, particularly in areas of finance, personnel, acquisition, logistics, and systems analysis. Includes a mix of theory and problem solving that provides the basic tools needed in the decision-making process and prepares the student for advanced courses involving the use of statistics. Major topic areas include probability distributions, sampling, hypothesis testing, quality control, non-parametric methods, simple linear regression and correlation, analysis of variance, time-series analysis and forecasting. Final exam. Prereq: Math 220/357. Sem hrs: 3 fall or spring.

Mgt 341. Fundamentals of Accounting. 1(1)
Introduction to financial accounting. Fundamental accounting concepts and techniques necessary for effective administration of an organization are studied, and include the analysis and recording of transactions, preparation and analysis of financial statements, time value of money, and price level adjustments. Final exam. Sem hrs: 3 fall or spring.

Mgt 360. Introduction to Management Science. 1(1)
Introduces the basic management science techniques with emphasis on applications to managerial decision making. Topics include model building, decision analyses, linear programming, network analysis, inventory theory, queuing theory, and simulation. Emphasis is also placed on developing the cadets' ability to critique and use the results of other operations research analyses. Final exam. Prereq: Math 220/357: Mgt 331 desired. Sem hrs: 3 fall or spring.

Mgt 361. The Management of Human Resources. 1(1)
A survey of human resource management, manpower planning, selection, communication, training, performance appraisals, and job design. Emphasis will be on motivational aspects of supervision techniques and the work environment. Impact of external factors (such as governmental regulation and labor unions will be discussed. Lecture, guided discussions, case studies, and exercises will be used. Case study, research projects. Prereq: Mgt 203 or concurrent enrollment in Mgt 203. Sem hrs: 3 fall or spring.

Mgt 364. Operations Research/Management Science II. 1(1)
A second introductory course in the mathematical techniques of operations research/management science emphasizing applications. Topics include scheduling, decision analysis, non-linear programming, and inventory. Final exam. Prereq: Math 363. Sem hrs: 3 spring.

Mgt 382. Introduction to Finance. 1(1)
An introduction to financial markets, specific investment vehicles (corporate stocks and bonds, mutual funds, government and municipal bonds, real estate and commodities), investment analysis and how financial decisons should be made. Topics include capital markets and institutions, risk and portfolio analysis and financial analysis. A term project provides experience in developing an investment portfolio and in investment decision making. Final exam. Prereq: Econ 222(202, 212). Mgt 341 is desirable. Sem hrs: 3 fall or spring.

Mgt 432. Managerial Accounting. 1(1)
Focuses on the types of accounting information and their appropriate uses by internal managers. Discusses (1) full cost or conventional cost accounting, (2) differential accounting, and (3) responsibility accounting. Lectures, guided discussions, problems and cases are used. Prereq: Mgt 341. Final exam. Sem hrs: 3 spring.

Mgt 437. Managerial Finance. 1(1)
Develops basic stock and bond valuation concepts and analyzes how the principles of financial management can be used to help maximize the value of a firm. Case studies and problems expose the student to current financial problems and their solutions. Final exam. Prereq: Mgt 341. Highly desirable--Mgt 382. Desirable--Mgt 432. Sem hrs: 3 fall.

Mgt 446. Organizational Theory. 1(2)
The internal dynamics of complex organizations and their environmental relationships are treated in this seminar. Organization theories and research conclusions are considered, and learning is confirmed by encountering a diversity of organizational simulations and experiences, with emphasis on organizational diagnosis and design. Term project or final exam. Prereq: Mgt 203. Sem hrs: 3 fall or spring.

Mgt 462. Case Studies in Operations Research. 1(1)
Case studies in advanced operations research/management science techniques including transportation problems, networks, mathematical programming and simulation. Emphasis on problem recognition, model formulation and Air Force applications. Term project. Prereq: Mgt 364. Sem hrs: 3 spring.

Mgt 472. Administrative Policy and Strategy. 1(2)
Stresses problem identification, strategic planning, decision theory, policy formulation and general management issues through the use of cases and critical incidents. Current developments in management will be reviewed and applied to actual situations, including at least one field trip. Final exam or term project. Prereq: 1/C standing. Sem hrs: 3 spring.

Mgt 475. Principles of Marketing. 1(1)
A study of the concepts, tools, and techniques of marketing management. Markets, life-cycle, product development, procurement, total cost concepts, product and service promotion, and distribution planning are topics discussed. Films, case studies and guest speakers elaborate concepts. A term project focuses on applications of marketing management to Air Force and business organizations. Term project. Prereq: Mgt 203. Sem hrs: 3 fall.

Mgt 485. Systems Acquisition and Management. 1(1)
Discussion of management problems inherent in development and acquisition of large, complex systems and the buyer-seller relationships of government and its contractors. Major areas of study include: the acquisition environment, policy formulation, management of acquisition activities, planning, negotiation strategy and tactics. Case studies of recent weapon systems programs and a simulated negotiation of a new weapon system provide the setting for class discussions. Final exam. Sem hrs: 3 spring.

Mgt 491. Management Information Systems. 1 (1)
Focuses on systems analysis and the analytical tools necessary to develop and evaluate both formal and informal information systems. The role of information processing in managerial decision making is analyzed. Lab. Term project. No final exam. Prereq: Mgt 203, Comp Sci 100. Sem hrs: 3 fall.

Mgt 495. Special Topics. 1(1)
Selected topics in management. Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department (not more than 3 sem hrs).

Mgt 499. Independent Study. 1(0)
Tutorial investigation of a specific area of management. No final. Sem hrs: 3 fall or spring.

MATHEMATICS (Math)

Offered by the Department of Mathematical Sciences

Math 130. Pre-Calculus Mathematics. 1(1)
College algebra and trigonometry. Final exam. Prereq: Department recommendation. Sem hrs: 3 fall.

Math 131. Calculus I. 1(1)
Functions; plane analytic geometry; limits, differentiation theorems; rules for finding derivatives, including differentiation of transcendentals; applications of the derivative in graphing, maximization, and related rates. Calculator use (geared to TI-58C) is stressed throughout the course. Final exam. Sem hrs: 3 fall or spring.

Math 132. Calculus II. 1(1)*
Derivatives and antiderivatives; definite integrals; integration techniques to include change of variables, trig substitution, integration by parts, partial fractions, tables of integrals, improper integrals, and numerical integration; area between curves, solids of revolution and work; conic sections. Final exam. Prereq: Math 131. Sem hrs: 3 fall or spring.

Math 133. Calculus III. 1(1)*
Multiple variable calculus, including vectors, multiple integrals and partial differentiation; solid analytic geometry to include lines, planes, and surfaces in three-space; series and sequences. Final exam. Prereq: Math 132. Sem hrs: 3 fall or spring.

Math 211. Differential Equations with Matrix Algebra. 1(1)*
An introductory course in systems of linear algebraic equations and in ordinary differential equations. Topics include Gauss-Jordan elimination, determinants, separable equations, exact equations, first order linear equations, higher order constant coefficient linear equations, series solutions, and numerical methods. Final exam. Prereq: Math 133. Sem hrs: 3 fall or spring.

Math 220. Probability and Statistics. 1(1)
Introduction to statistics, including frequency distributions, sampling techniques, random variables, statistical inference, hypothesis testing, reliability, regression, and correlation analysis. Final exam. Prereq: Math 133. Sem hrs: 3 fall or spring.

Math 310. Mathematical Modeling. 1(1)
An introductory course in mathematical modeling aimed at basic science/ engineering divisional majors. Students model various features of given phenomena ranging from a simple pendulum to real-world Air Force applications. Twelve class periods are devoted to in-class work on small projects. Final exam. Prereq: Completion of the core math sequence. Sem hrs: 3 fall or spring.

Math 320. Foundations of Mathematics. 1(1)
Spans a gap between introductory calculus and more theoretically oriented courses in mathematics and the basic sciences. Axiomatic structure of mathematics, basic logic, basic methods of modern mathematics, set theory, relations, functions, the real and natural number systems, and algebra analysis. Final exam. Prereq: Math 211(210). Sem hrs: 3 fall or spring.

Math 330. Fourier Analysis, Laplace Transforms, and Applied Vector Analysis. 1(1)
Complex variables, including analyticity and elementary functions. Fourier series and Transform. Laplace Transform and applications. Vector calculus: differential (gradient, divergence, curl) and integral (Divergence Theorem, Stokes' Theorem, Green's Lemma). Final exam. Prereq: Math 211. Sem hrs: 3 fall or spring.

Math 341. Introductory Numerical Analysis. 1(1)
Numerical solutions of non-linear equations; numerical methods in linear algebra, theory of polynomial approximations; interpolation theory; error analysis; numerical integration and numerical solution of differential equations; computer programming laboratory exercises. Final exam. Prereq: Math 211 (210); Comp Sci 100. Sem hrs: 3 fall.

Math 351. Applied Differential Equations. 1(1)
Second order linear differential equations; numerical techniques; power series solutions; systems of first order linear differential equations; and partial differential equations. Final exam. Prereq: Math 211 (210). Sem hrs: 3 fall or spring.

Math 357. Probability with Statistics. 1(1)
Probability; discrete and continuous random variables and their distributions; characterizations and functions of random variables; sampling distributions; point and interval estimation and hypothesis testing. Successful completion fulfills requirement for Math 220. Final exam. Prereq: Core math sequence or department permission. Sem hrs: 3 fall or spring.

Math 358. Statistics. 1(1)
Techniques of statistical inference; sampling distributions; hypothesis testing; parameter estimation; confidence intervals; analysis of variance; regression analysis; non-parametric analysis; experimental design considerations; introduction to computer statistics program and introduction to reliability. Final exam. Prereq: Math 357. Sem hrs: 3 fall or spring.

Math 360. Linear Algebra. 1(1)
Matrix algebra and systems of linear equations; determinants; vector spaces including function spaces and inner product spaces; linear transformations including rotations, change of basis and transition matrices; eigenvalues, eigenvectors, and quadratic forms. Final exam. Prereq: Math 211 (210). Sem hrs: 3 fall or spring.

Math 363. Operations Research/Management Science I. 1(1)
An introductory course in the mathematical techniques of operations research/management science emphasizing applications. Topics include mathematical modeling, linear programming, queuing dynamic programming, and networks. Final exam. Prereq: Math 220 or Math 357. Sem hrs: 3 fall.

Math 365. Modern Algebra. 1(1)
Group theory, including Lagrange's Theorem, permutation groups, normal subgroups and quotient groups. Theory of linear spaces and matrices, determinants, characteristic and minimal polynomials, invariant subspaces and reducibility, and rational and Jordan canonical forms. Final exam. Prereq: Math 211 (210); Math 320. Sem hrs: 3 fall.

Math 366. Advanced Calculus I. 1(1)
Theoretical study of concepts of calculus for functions of one variable. Final exam. Prereq: Math 320. Sem hrs: 3 fall.

Math 367. Advanced Calculus II. 1(1)
Theoretical study of concepts in multivariable calculus. Final exam. Prereq: Math 366. Sem hrs: 3 spring.

Math 441. Linear Programming. 1(1)
Review of matrix algebra, convex sets and linear inequalities. Theory and computer implementation of the simplex and transportation algorithms. Duality theory and sensitivity/post-optimality analysis. Mathematical modeling and Air Force applications. Introduction to integer programming models and algorithms. Final exam. Prereq: Math 360. Sem hrs: 3 fall.

Math 451. Complex Variables. 1(1)
Analytic functions; mapping, integrals; power series; residues and poles, applications. Final exam. Prereq: Math 211 (210). Sem hrs: 3 spring.

Math 455. Advanced Engineering Mathematics. 1(1)
Applied partial differential equations; solutions of boundary value problems. Methods of solution include eigenfunction expansion, Green's formulas and variation of parameters. Introduction to numerical solution methods. Final exam. Prereq: Math 351 or Math 368. Sem hrs: 3 fall or spring.

Math 457. Probabilistic Models in Operations Research. 1(1)
Introduces the concepts of sequences of random variables, Markov chains, branching processes, and birth-death processes with emphasis on military applications. Also includes an operations research capstone project in which teams of cadets work on projects designed to give them experience as scientific analysts. Final exam or final report. Prereq: 1/C standing, Math 357. Sem hrs: 3 spring.

Math 468. Intermediate Differential Equations. 1(1)
A study of linear and non-linear differential equations from both computational and theoretical points of view. Topics include nth order linear equations, systems of differential equations, series solution techniques, stability theory, and Lyapunov functions. Final exam. Prereq: Math 360 or 365; completed or enrolled in Math 366. Sem hrs: 3 fall.

Math 495. Special Topics. 1(1)
Selected advanced topics in mathematics. Final exam. Prereq: Department permission. Sem hrs: 3 fall or spring.

Math 499. Independent Study and Research. 1(0)
Individual study and/or research under the direction of a faculty member. Oral midterm and final; term paper. Prereq: Department permission. Sem hrs: 3 fall or spring.

MECHANICS (Mech)

Offered by the Department of Engineering Mechanics

Mech 210. Mechanics and Materials in Engineering Design. 1(2)*
Strength of materials and materials science as applied to system design. Stress and deformation analyses of axial, torsional, flexural, and combined loads. Evaluation of materials; their properties, mechanical behavior, and failure mechanisms in response to both environmental effects and various external loading conditions. Influence of thermomechanical processing and composition on material properties. Final exam. Prereq: Engr 110, Math 133. Sem hrs: 3 fall or spring.

Mech 320. Dynamics. 1(2)
Equilibrium in three dimensions. Kinematics including absolute and relative motion. Kinetics including force-mass-acceleration, work-energy, and impulse-momentum. Free and forced linear vibrations of a single degree of freedom system. Vector solution methods emphasized. Final exam. Prereq: Engr 110, Math 211 (210). Sem hrs: 3 fall or spring.

Mech 331. Aerospace Structural Mechanics. 1(1)
Analysis of aircraft and space vehicle structural components. Introduction to aircraft loads. Effects of bending, torsion, and shear on typical aerospace structural components. Introduction to energy methods. Statically indeterminate beams, shear center, shear flow, column buckling. Final exam. Prereq: Mech 210. Sem hrs: 3 fall.

Mech 332. Aerospace Structural Design. 1(2)
Applications of Mech 331 concepts to the design of typical aerospace structures. Connection design, inelastic design, semitension field beam design, and semimonocoque panel design. Consideration of space and missile structures, aircraft structural repair and aerospace structural design requirements. Lab. Final report. Prereq: Mech 331 and Aero 311. Sem hrs: 3 spring.

Mech 342. Introductory Metallurgy. 1(1)
Basic concepts of metallurgical thermodynamics and kinetics applied to phase diagrams of alloy systems, corrosion of metals, and materials processing. Final exam. Prereq: Mech 210, Math 211 (210). Sem hrs: 3 spring.

Mech 352. Mechanical Properties of Materials. 1(1)
Behavior of materials under simple and combined stress systems. Crystal structure, dislocation theory and strengthening mechanisms. Principles of plastic deformation; brittle fracture and fatigue failure theories. Fracture mechanics, behavior of composite materials, analysis of materials and design considerations. Final exam. Prereq: Mech 210, Math 211 (210). Sem hrs: 3 fall or spring.

Mech 395. Automotive Systems Analysis. 1(2)
An analysis of the modern passenger automobile as an engineering system. Engineering theory applied to the design, maintenance, and integration of automotive subsystems. Theoretical analyses of power plants, clutches, transmissions, drive trains, suspension systems, tires, brakes, steering dynamics, and overall vehicle performance including economy. Final report. Prereq: 1/C or 2/C standing; Mech 320. (Course enrollment limited; departmental approval required.) Sem hrs: 3 fall or spring.

Mech 420. Vibrations. 1(1)
Free and forced vibrations of single and multidegree-of-freedom linear and non-linear systems. Matrix methods; vibrations of continuous media. Final exam. Prereq: Math 351 and Mech 320. Sem hrs: 3 spring.

Mech 432. Matrix Structural Analysis 1(1)
Analysis of truss and frame structures using matrix methods. Element stiffness matrices obtained from both equilibrium and energy considerations. Introduction to FORTRAN programming and finite element methods. Application of digital computers to structural analysis. Final exam. Prereq: Mech 331. Sem hrs: 3 fall.

Mech 451. Physical Metallurgy. 1(2)
Physical metallurgy related to properties of materials. Materials structure and imperfections, diffusion, thermodynamics, phases and phase transformations, and thermomechanical processing. Discussion of steels and other alloy systems. Lab. Final exam. Prereq: Mech 342. Sem hrs: 3 fall.

Mech 454. Intermediate Dynamics. 1(1)
Study of three-dimensional kinematics, dynamics of particles and systems of particles. Lagrangian dynamics and dynamics of rigid bodies. Final exam. Prereq: Mech 320; Math 351. Sem hrs: 3 fall.

Mech 459. Advanced Aerospace Materials. 1(1)
Advanced and theoretical topics in the development of high temperature materials for aerospace systems. Fundamental principles of metallurgical thermodynamics, analysis of ideal and non-ideal liquid and solid alloys, heterogeneous equilibria, phase diagrams, gas-metal reactions, corrosion principles, oxidation-resistant and high-temperature materials. Problems in materials application at high temperature. Field trip. Final exam. Prereq: Aero 363 and Mech 342. Sem hrs: 3 spring.

Mech 461. Experimental Mechanics. 1(2)
Introduction to experimental measurements and analyses. Includes theory and application of static and dynamic instrumentation, strain gages, transducers, photoelasticity, holography and non-destructive testing. Hands-on laboratory experience constitutes one-half of course. Laboratory sessions involve analysis, design, test plan generation, calibration and testing. Final exam. Lab. Prereq: Mech 320; completed or enrolled in Mech 331. Sem hrs: 3 fall.

Mech 462. Engineering Design. 1(2)
Application of engineering principles to the creative design process. Emphasis placed on analysis, design and construction of prototype models. Topics include the creative design process, basic manufacturing techniques, technical communications, measurement systems and project management methods. Major design project and a final report. Lab. Prereq: Mech 320 and Mech 451 or Mech 461. Sem hrs: 3 spring.

Mech 482. The Finite Element Method in Mechanics. 1(1)
Finite element techniques in mechanics. Derivation of element stiffness for beam, two-dimensional plane and plate-bending functions. Introduction to the treatment of dynamic and stability problems. Practical applications using digital computers. Final exam. Prereq: Mech 432. Sem hrs: 3 spring.

Mech 495. Special Topics. 1(1)
Selected topics in mechanics. Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department (not more than 3 sem hrs).

Mech 499. Independent Study. 1(0)
Individual study research, or design on a topic established with the permission of the department head. Final report. Sem hrs: 3 fall or spring.

MILITARY TRAINING (Mil Tng)

Offered by the Commandant of Cadets. (Administered by the Military Training Division under the Deputy Commandant for Military Instruction-- exceptions noted under course descriptions.)

Mil Tng 100. Basic Cadet Training. 0(0)
Approximately six-week transition period from civilian to military life. Indoctrination in the overall Academy program, cadet regulations, the Honor Code, manual of arms, drill, customs and courtesies and other general military subjects. Introduction to basic Air Force weapons, firing the M-16 rifle and a 38 pistol; and a field encampment. Pass/Fail. No final. Prereq: Concurrent enrollment in Phy Ed 100. Sem hrs: 5 summer.

Mil Tng 220. Survival, Evasion, Resistance and Escape (SERE). 0(0)
Three-week Basic Aircrew Survival Training program of approximately two weeks on-base training covering global aspects of survival and code of conduct and approximately one week of field training. Completion satisfies USAF Survival Training requirements. Pass/fail. No final. Sem hrs: 2 summer.

Mil Tng 301. Operation Air Force Program. 0(0)
Conducted at selected Air Force bases. Provides exposure to an operational Air Force unit and functions of an airman, NCO, junior officer. Pass/ Fail. No final. Sem hrs: 2 summer.

Mil Tng 303. RECONDO Training. 0(0)
Field tactical training conducted by the U.S. Army at Fort Carson and North Cheyenne Canyon. Pass/Fail. No final.

Mil Tng 304. Naval Special Warfare Orientation. 0(0)
Diving training program conducted by the U.S. Navy at San Diego. Satisfactory completion results in being certified world-wide scuba qualified. Pass/Fail. No final. Sem hrs: 2 summer.

Mil Tng 305. Boys State/Girls State. 0(0)
Positions as counselors for high school juniors at various American Legion Boys' State/Girls State encampments. Pass/Fail. No final. Sem hrs: 2 summer.

Mil Tng 306. BSA Philmont. 0(0)
Positions at Philmont Scout Ranch in Cimarron, New Mexico, as rangers or instructors in the staff camp areas. Pass/Fail. No final. Sem hrs: 2 summer.

Mil Tng 310. Training in Personal Skills. 0(0)
This program promotes personal growth and interpersonal effectiveness. It provides training in the human relations skills necessary for success in any group. The training occurs primarily through intensive small group experiences led by experienced group facilitators. Participants learn such special skills as giving/receiving feedback, feeling comfortable in a group, and coping with stress. Sem hrs: 2 summer.

Mil Tng 330. Summer Leadership Preparation. 0(0)
Instruction and training for selected thirdclass and secondclass cadets to prepare them for secondclass/firstclass summer leadership or instructor positions. Pass/Fail. No final. Prereq: Pre-selection for key summer leadership or instructor position. (Administered by the Deputy Commandant for the Cadet Wing and the Deputy Commandant for Military Instruction.) Sem hrs: 1 spring.

Mil Tng 332. Summer Scientific Seminar. 0(0)
Cadets serve as counselors and escorts for approximately 450 high school seniors from all 50 states. During the two one-week sessions, the high school students are housed in Vandenberg Hall, attend scientific workshops, tour the Academy and surrounding areas, participate in recreational sports, and attend various evening programs. Qualified cadets will help with some of the workshops. Sem hrs: 2 summer.

Mil Tng 337. Preparatory School Cadre Duty. 0(0)
A three-week program at USAFA Preparatory School. Cadets serve as assistant military training instructors for Preparatory School students during their basic military training. Provides cadets with an opportunity to develop their leadership and management techniques working with both Regular and Reserve airmen. Cadet selection will be based on cadet performances, MPA, AOC recommendations, and personal interview. Sem hrs: 2 summer.

Mil Tng 352. Basic Airborne Training. 0(0)
Conducted at the U.S. Army Infantry School, Fort Benning, Georgia. Includes basic skills of static line parachute jumping. Pass/Fail. No final. Sem hrs: 2 summer.

Mil Tng 402. BCT Leadership Duty. 0(0)
Leadership positions as instructors, officers or NCOs in the cadet chain of command in the Basic Cadet Training program for the new fourthclass. Pass/Fail. No final.(Administered by the Deputy Commandant for the Cadet Wing and the Deputy Commandant for Military Instruction.) Sem hrs: 2 summer.

Mil Tng 407. Composite Group Leadership Duty. 0(0)
Cadet officer and NCO leadership positions maintaining command, control, and accountability and providing billetng for all cadets taking summer academic courses and transient cadets using cadet area facilities. Pass/Fail. No final. (Administered by the Deputy Commandant for the Cadet Wing.) Sem hrs: 2 summer.

Mil Tng 409. Academy Awareness Program. 0(0)
Selected cadets serve as counselors and tutors for minority group students in the San Diego, Miami and Philadelphia school districts (Administered by the Minority Affairs Division under the Office of Admissions and Registrar.) Sem hrs: 2 summer.

Mil Tng 411. Air Training Command Leadership Duty. 0(0)
Leadership positions with a Basic Military Training Squadron at Lackland AFB, Texas, as assistants to squadron commanders and as basic airmen training instructors and counselors. Pass/Fail. No final. Sem hrs: 4 summer.

Mil Tng 420. SERE Leadership Duty. 0(0)
Leadership positions as instructors, officers, and NCOs in the cadet chain of command for the thirdclass SERE Training program. Pass/fail. No final. Sem hrs: 2 summer.

Mil Tng 431. Office of Public Affairs. 0(0)
Work directly with the Public Information and Internal Communications Divisions of the Office of Public Affairs. Duties involve escorting tours through Academy facilities; assisting with visitors at the Visitors Center, the summer visitor booths and Arnold Hall; attending civic functions to present briefings, working with civilian media; and preparing news releases; working with the staff of the *Falcon Flyer* and Channel 6. Sem hrs: 2 summer.

Mil Tng 491. Astronomy Operations. 0(0)
One to three selected cadets will be accepted for leadership training at the Academy Planetarium and Observatory during each summer session. An interview with an Astronomy Branch instructor (CWINA) is required prior to acceptance. Completion of an Astronomy or Astronomy-related course at USAFA is recommended. (Administered by Aviation Science Division under the Deputy Commandant for Military Instruction.) Sem hrs: 2 summer.

Mil Tng 495. Special Training Programs. 0(0)
Special traning, participation, observation, leadership, and/or instructional programs conducted to fill a temporary or unforeseen need or to test a new program or concept prior to full implementation. Pass/Fail. No final. Sem hrs, leadership credit, and duration may vary depending on the nature of the program (not to exceed 7 1/2 sem hrs).

PHILOSOPHY (Philos)

Offered by the Department of Philosophy and Fine Arts

Philos 310. Ethics. 1(1)*
A critical study of several major moral theories and their application to contemporary moral problems with special emphasis upon the moral problems of the profession of arms. Final exam. Prereq: 1/C, 2/C, 3/C standing or department permission. Sem hrs: 3 fall or spring.

Philos 311. War, Morality, and the Military Profession. 1(1)
An in-depth examination of the moral issues raised by the profession of arms. Presumes an understanding of moral theory, including, as a minimum, relativism, egoism, utilitarianism and deontology. May be taken as a sequel to Philos 310, or substituted for Philos 310 (with department permission) if the student has independently studied ethical theory. Final exam. Prereq: Department permission. Sem hrs: 3 spring.

Philos 330. Introduction to the Philosophy of Science. 1(1)
An analysis of the basic assumptions and principles of the sciences. Types of topics considered include: the scientific method, scientific laws, theory construction, scientific explanation, probability, the relationship between the social sciences and the physical sciences, and the relationship between the sciences and the humanities, especially in the formation of values. Final exam. Prereq: 1/C or 2/C standing or department permission. Sem hrs: 3 fall of even-numbered years.

Philos 359. Problems in Philosophy. 1(1)
philosophical examination of several classical and contemporary approaches to a number of standard metaphysical, epistemological and theological problems. Final exam. Prereq: 1/C, 2/C, 3/C standing or department permission. Sem hrs: 3 fall of odd-numbered years.

Philos 360. Applied Reasoning. 1(1)
A introduction to basic deductive and inductive applied logic. It will include an analysis and evaluation of the notions of evidence and good arguments in fields such as law, medicine, science, engineering, behavioral and social sciences, and the military studies. Students will be expected to concentrate on reasoning in a specific field of interest. Final exam. Prereq: Department permission. Sem hrs: 3 fall.

Philos 370. Introduction to Symbolic Logic. 1(1)
An advanced course in logic that examines propositional and predicate languages, model theory, quantifiers, proofs, identity theory, and properties of logical systems. Final exam. Prereq: Completed or enrolled in Comp Sci 100. Sem hrs: 3 spring.

Philos 382. American Philosophy. 1(1)
An examination of the philosophic background of Puritanism, the Revolutionary period, transcendentalism and pragmatism with special reference to the thought of major American philosophers such as Pierce, James, Royce, Santayana, Dewey. Final exam. Prereq: Completed or enrolled in Philos 310. Sem hrs: 3 spring.

Philos 400. Great Religions of the World. 1(1)
A comparative and critical study of the world's great religions that examines the relation of religion to morality; the nature of religious aspirations; the spiritual influence of religion upon culture and society; the sacred scriptures; the concept of God, salvation, evil, and the afterlife. Examines Christianity, Buddhism, Judaism, Hinduism, Confucianism, and Islam. Final exam. Prereq: 1/C, 2/C, or 3/C standing. Sem hrs: 3 fall or spring.

Philos 495. Seminar in Philosophy. 1(1)
Selected topics in philosophy. Final exam or final report. Prereq: Department permission. Sem hrs: 3 fall or spring.

Philos 499. Independent Study. 1(0)
Philosophical research guided by an instructor. Topics and meetings arranged with the instructor. No final. Prereq: Department permission. Sem hrs: 3 fall or spring.

PHYSICAL EDUCATION (Phy Ed)

Offered by the Department of Physical Education under the Director of Athletics.

Phy Ed 100. Basic Physical Training. 0(0)
Preparation for strenuous physical education and athletics by development of physical strength, endurance, agility, and coordination through conditioning exercises and sports competition. Passing cadet minimums for Physical Fitness Test and swimming test. Special training in conditioning as needed. Pass/Fail. Sem hrs: 2 summer.

Phy Ed 105-106. Intramural Athletics/Physical Fitness Test/Aerobic Test. 0(0)
Intramural athletics plus cadet minimums on Physical Fitness and Aerobic Tests. Pass/Fail. Sem hrs: Phy Ed 105 - 1 fall; Phy Ed 106 - 1 spring.

Phy Ed 120. Gymnastics, Swimming, Boxing (Men), Physical Development (women), optional intercollegiate sport and optional elective. 0(2)
Instruction in gymnastics, swimming, boxing and physical development. Option to participate in intercollegiate athletics. Option to take one of seventeen elective sub-courses. Remedial instruction in swimming for designated cadets. Sem hrs: 1 fall and spring.

Phy Ed 205-206. Intramural Athletics/Physical Fitness Test/Aerobic Test. 0(0)
Intramural athletics plus passing cadet minimums on physical fitness and aerobic tests. Pass/Fail. Sem hrs: Phy Ed 205 - 1 fall; Phy Ed 206 - 1 spring.

Phy Ed 220. Introduction to Racquet Sports, Wrestling, Tennis, Optional Intercollegiate Sport and Optional Elective. 0(2)
Instruction in racquet sports, wrestling and tennis. Option to participate in intercollegiate athletics. Option to take one of seventeen elective subcourses. Remedial instruction in swimming for designated cadets. Sem hrs: 1 fall or spring.

Phy Ed 305-306. Intramural Athletics/Physical Fitness Test/Aerobic Test. 0(0)
Intramural athletics plus passing cadet minimums on the physical fitness and aerobics tests. Pass/Fail. Sem hrs: Phy Ed 305 - 1 fall; Phy Ed 306 - 1 spring.

Phy Ed 320. Judo, Golf, Water Survival, Optional Intercollegiate Sport and Optional Elective. 0(2)
Instruction in golf, judo and water survival. Option to participate in intercollegiate sports. Option to take one of seventeen elective subcourses. Remedial instruction in swimming for designated cadets. Sem hrs: 1 fall and spring.

Phy Ed 405-406. Intramural Athletics/Aerobics Test. 0(0)
Intramural athletics and must pass Aerobics Fitness Test.

Pass/Fail. Sem hrs: Phy Ed 405 - 1 fall, Phy Ed 406 - 1 spring.

Phy Ed 420. Volleyball, Unarmed Combat, Physical Fitness Methods, Optional Intercollegiate Sport and Optional Elective. 0(2)
Instruction in volleyball, unarmed combat and developing a personal fitness program. Option to participate in intercollegiate sports. Option to take one of seventeen elective subcourses. Remedial instruction in swimming for designated cadets. Sem hrs: 1 fall and spring.

Phy Ed 440. Physiology of Exercise. 1(1)
Selected classroom and laboratory studies of the human organism in motion. An examination of the physiological factors affecting human performance under various degrees of stress and environmental conditions. Emphasis is placed on control mechanisms, characteristics of muscular contraction, energy sources and other body adjustment mechanisms in response to physical exercise. No final. Prereq: Department permission. Sem hrs: 3 fall.

Phy Ed 460. Scientific Principles and Methods of Coaching. 1(1)
The study of scientific principles of coaching from selected team and individual sports. The fundamental factors underlying athletic performance are analyzed in relation to the laws of physics. Emphasis is placed upon the philosophy and methods of human motivation in athletics from various perspectives: biological, physiological, psychological and sociological. No final. Prereq: Department permission. Sem hrs: 3 spring.

Phy Ed 495. Special Topics. 1(1)
Selected topics in the exercise sciences. Final exam or report. Prereq: Department permission. Sem hrs: 3 with offering time determined by department.

Phy Ed 499. Independent Study. 1(0)
Individual research and study in the physical education field under the direction of a faculty member. Emphasizes the use of laboratory facilities. No final. Research report. Prereq: Phy Ed 440 and department permission. Sem hrs: 1-3 fall or spring.

PHYSICS (Physics)

Offered by the Department of Physics

Physics 211. General Physics I. 1(1)*
Reviews mechanics, emphasizing work and energy. Introduction to fluid mechanics and thermodynamics. Emphasis is placed on the conservation laws and the use of vectors and calculus. Final exam. Prereq: Engr 110; completed or enrolled in Math 211 (210). Sem hrs: 3 fall or spring.

Physics 311. General Physics II. 1(1)*
Fundamental principles of electricity and magnetism, wave motion, and optics. Emphasis is placed on the conservation laws and the use of vectors and calculus. Final exam. Prereq: Physics 211. Sem hrs: 3 fall or spring.

Physics 357. Classical Mechanics I. 1(1)
Particle kinematics and dynamics, conservation laws, gravitation, vibrations, rotating coordinate systems, central forces and an introduction to rigid body motion. Fundamentals of mathematical physics including vector calculus. Final exam. Prereq: Physics 211; Completed or enrolled in Math 351. Sem hrs: 3 fall.

Physics 358. Classical Mechanics II. 1(1)
General rigid body motion, Lagrangian and Hamiltonian dynamics, vibrations, and normal modes. Fundamentals of mathematical physics, including matrix algebra, integral transforms, partial differential equations and orthogonal functions. Final exam. Prereq: Physics 357. Sem hrs: 3 spring.

Physics 363. Introduction to Modern Physics I. 1(1)
Introduction to special relativity. Consideration of the dual nature of light and of the wave nature of particles. Investigates the Bohr model of the atom. Introduction to quantum mechanics and its application to problems involving simple forms of potential energy. Application of the Schroedinger equation to the hydrogen atom. Final exam. Prereq: Completed or enrolled in Physics 311; completed or enrolled in Math 351. Sem hrs: 3 fall.

Physics 364. Introduction to Modern Physics II. 1(1)
Quantum mechanical approach to angular momentum of the hydrogen atom. Atomic and molecular spectra. Investigation of various models of the nucleus. Nuclear reactions and decay schemes; fission and fusion. Particle detectors and accelerators. Brief introduction to solid state physics. Discussion of elementary particle theory. Final exam. Prereq: Physics 363 in preceding semester. Sem hrs: 3 spring.

Physics 370. Introduction to Space Science. 1(1)
A conceptual survey of the space environment beginning at the earth's surface and extending out beyond the boundaries of our galaxy. Topics include meteorology, climatology, planetary ionospheres and magnetospheres, solar phenomena, solar-terrestrial interactions, stellar structure, galactic structure, and origin of the universe. Final exam. Prereq: Completed or enrolled in Physics 311. Sem hrs: 3 fall or spring.

Physics 382. Laser Physics and Light. 1(1)
Theory of laser operation. Optical phenomena including interference, polarization, coherence, and absorption. Solid-state liquid, chemical, and gaseous lasers. Various applications including weapons, communications, and holography. Final exam. Prereq: Physics 311. Sem hrs: 3 spring.

Physics 391. Optics. 1(1)
Topics in geometrical optics including reflection, refraction, lenses, mirrors, and optical instruments. Discussions of physical optics will include interference, diffraction, absorption, scattering, polarization, and optical spectra. Selected topics in contemporary optics such as non-linear optics and lasers. Final exam. Prereq: Completed or enrolled in Physics 311. Sem hrs: 3 fall.

Physics 392. Plasma Physics. 1(1)
A comprehensive introduction to the plasma state of matter. Topics include single particle motion, adiabatic invariants, fluid description of a plasma, waves in plasmas, diffusion and resistivity, stability and controlled fusion. Final exam. Prereq: Physics 311. Sem hrs: 3 spring.

Physics 411. Modern Physics. 1(1)*
Review of the interrelationships among science and engineering core courses with emphasis on the unifying role of physics and the conservation laws. Introduction to selected topics in modern physics including the concepts and development of physics since 1890. Topics include special relativity, quantum mechanics, radioactivity, and nuclear physics. Field trips in Honors sections. Final exam. Prereq: Physics 311; I/C standing or department permission. Sem hrs: 3 fall or spring.

Physics 441. Laboratory Techniques. 1(2)
Introduction to laboratory skills and instrumental techniques. Reinforces concepts of physical behavior. Field trip. No final. Prereq: Physics 311 . Sem hrs: 3 spring.

Physics 442. Advanced Physics Lab. 1(2)
Selected experiments develop laboratory skills and reinforce the concepts of physical ideas. Field trip. No final. Prereq: Physics 441 and Physics 363 or department permission. Sem hrs; 3 fall.

Physics 453. Solar-Planetary Interactions. 1(1)
Discussion of the basic physical principles controlling the sun's interaction with planetary atmospheres. Topics include the dynamics and structure of the solar atmosphere, sun spots, coronal holes, origin of the solar wind, interaction of the solar wind with planetary magnetospheres, and the effects of this interaction on space vehicles and earth-based systems. Final exam. Prereq: Physics 370 and 392. Sem hrs: 3 fall.

Physics 454. Upper Atmospheric Physics. 1(1)
Examination of the structure and morphology of the earth's upper atmosphere starting at the stratosphere and extending up to the inner magnetosphere. Topics include ozone morphology and distribution, mesopheric structure, ionospheric chemistry and dynamics, aurora borealis, and the effects of ionospheric storms on satellites and ground based systems. Final exam. Prereq: Physics 370 and 392. Sem hrs: 3 spring.

Physics 459. Quantum Mechanics. 1(1)
Postulate basis of quantum mechanics. Solutions of the wave equation, operators, angular momentum, harmonic oscillator, and hydrogen atom. Quantum theory applied to physical problems. Final exam. Prereq: Physics 358 and Physics 364. Sem hrs: 3 fall.

Physics 461. Electromagnetic Theory I. 1(1)
Develops Maxwell's equations and basic principles of electromagnetism. Includes electrostatic fields in both vacuum and in dielectrics, the Laplace and Poisson equations, magnetic fields associated with constant and time-varying currents, and magnetic materials. Final exam. Prereq: Physics 311 ; Math 330 or Physics 358. Sem hrs: 3 fall.

Physics 462. Electromagnetic Theory II. 1(1)
Applications of Maxwell's equations, plane waves, reflection, refraction, guided waves, electric and magnetic dipoles and quadrupoles, and antennas. The interaction between plane waves and plasmas is treated. Final exam. Prereq: Physics 461 in the preceding semester. Sem hrs: 3 spring.

Physics 465. Statistical Physics. 1(1)
Quantum statistical mechanics as an underlying theory of systems in contact. Applications include low temperature physics, magnetism, boson and fermion gases, ideal gases, kinetic theory and thermodynamics. Final exam. Prereq: Physics 364 or department permission. Sem hrs: 3 spring.

Physics 480. Astronomical Techniques. 1(1)
Spherical astronomy topics of positions, time and stellar coordinate systems. Astronomical instrumentation including telescopes, cameras, spectrographs, and photometers. Theory of radiation, optics, photography, spectroscopy, densitometry, and data reduction. Extensive use of USAFA Observatory including approximately six night classes. Field trip to visit a prominent astronomical facility. Final exam. Prereq: Completed or enrolled in Physics 311. Sem hrs: 3 fall only.

Physics 486. Astrophysics. 1(1)
Photometry and spectroscopy. Thermal radiation and radiative transfer. Model stellar atmospheres. Energy generation processes. Stellar evolution with particular emphasis on our sun. Final exam. Prereq: Physics 311. Sem hrs: 3 spring of even years only.

Physics 495. Special Topics. 1(1)
Selected topics in physics. Final exam or final report. Prereq: Department permission. Sem hrs: 3 with offering time determined by department.

Physics 499. Independent Study. 1(0)
Individual research under the direction of a faculty member. Final report. Prereq: Department permission. Sem hrs; 3 fall or spring.

POLITICAL SCIENCE (Pol Sci)

Offered by the Department of Political Science

Pol Sci 200. Introduction to Political Science. 1/2(1x)
As a first course in political science, this offers a survey of the evolution of Western political thought in order to explain the chief contemporary ideologies and forms of government. Examples of the ideologies and governments in the world today are included. Foundations are established for subsequent study of American government, international relations, and more specialized topics for political science. Final exam. Sem hrs: 1 1/2 fall or spring. (Not offered second half of spring semester.)

Pol Sci 201. American National Government. 1/2(1x)*
Building on the concepts and ideas of Pol Sci 200, this course endeavors to engender an understanding and appreciation of the political traditions and behavior of Americans and of the structure and function of our national governing institutions. An emphasis will be placed on the policy process. Honors section(s) available. Final exam. Prereq: Pol Sci 200. Sem hrs: 1 1/2 fall or spring. (Not offered first half of fall semester.)

Pol Sci 203. The International Political System. 1/2(1x)*
This segment of the introductory sequence is devoted to the study of the relations among nations, with emphasis on the structure and characteristics of the contemporary international political system. Final exam. Prereq: Pol Sci 201. Sem hrs: 1 1/2 fall or spring. (Not offered second half of fall semester.)

Pol Sci 232. Comparative Politics. 1(1)
The transition from feudalism to capitalism and the emergence of the modern bureaucratic state. The political systems of the United States, Britain, France, Germany, Japan, Soviet Union, China, and other countries are covered. Topics for discussion include leadership, organizational and ideological aspects of socio-political change and the relative merits of revolutionary violence or reformist, incremental strategies in effecting fundamental transformations of societies. Final exam. Sem hrs: 3 fall.

Pol Sci 349. Political Analysis. 1(1)
Introduction to the methodological foundations of contemporary political research. Emphasis on current research designs and methods in political science such as quantitative analysis, interviews, survey research, simulation, and forecasting. Research paper. Prereq: Pol Sci 200, Math 220 (or Math 357), or department permission. Sem hrs: 3 spring.

Pol Sci 352. Political Theory. 1(1)
An overview of political thought from the Ancient Greeks to the present. Basic Western political concerns such as equality, freedom, justice, power, natural rights, the nature of man, and the ideal government are considered in terms of how political theorists have dealt with them and how these issues relate to the present. Research paper. Prereq: Pol Sci 200. Sem hrs: 3 fall.

Pol Sci 371. American Political Parties and Interest Groups. 1(1)
Investigates the roles and functions of political parties and interest groups in the American political process. Focuses on party functions, types, ideologies, organization, goals, financing, and discipline as well as on interest group types, organization, goals, and influence. During even-year offerings, particular emphasis will be placed on national elections. Final exam. Prereq: Pol Sci 201. Sem hrs: 3 fall.

Pol Sci 383. American Foreign Policy: Process and Issues. 1(1)
Analysis of U.S. foreign policy in the post-1945 period. Examination of the policy-making environment and the roles of the President, the Department of State, the Congress, and various executive departments. Case studies. Final exam. Prereq: Pol Sci 203. Sem hrs: 3 fall.

Pol Sci 385. Public Administration. 1(1)
Analyzes the formulation and execution of public policy in America. Includes study of organization theory, administrative process, structure of U.S. federal bureaucracy, decision-making theory, and bureaucratic politics. Case studies. Research paper. Prereq: Pol Sci 201. Sem hrs: 3 spring.

Pol Sci 412. Defense Policy. 1(1)*
Relationships among military policy, foreign policy, and national security policy. Formulation of defense policy in terms of external threats, American political climate, and impact of military technology. Institutional machinery for making strategy. Final exam. Prereq: Pol Sci 203 or department permission. Sem hrs: 3 fall or spring.

Pol Sci 421. Political Violence and Revolutionary Change. 1(1)
Focuses on the use of organized violence by non-governmental groups designed to achieve political objectives of various kinds, the social conditions underlying such actions, the factors which account for the success or failure of these efforts, and the resulting effects on the larger socio-political context. Particular emphasis is placed on revolution and agitational terrorism. Research paper. Prereq: Pol Sci 203. Sem hrs: 3 fall.

Pol Sci 441. Senior Seminar in International Relations. 1(1)
Examines contending theories and perspective on world politics. Consideration of issues relevant to foreign policy formulation such as the use of force in power politics, international political economy, international organization, transnation actors, interdependence, and future world order. Research paper. Prereq: 1/C standing or department permission. Sem hrs: 3 spring.

Pol Sci 442. Senior Seminar in American Politics and Public Policy. 1(1)
This course examines the impact of American political institutions and processes on U.S. policy formulation and implementation. Introduces basic concepts of policy studies and analysis. Research paper. Prereq: 1/C standing or department permission. Sem hrs: 3 spring.

Pol Sci 460. Comparative Defense Policy. 1(1)
A comparative study of selected defense policies and policy making with emphasis on the Soviet Union, China, selected Western European states, and Japan. Case studies examine variations in doctrine, weapons acquisition, and force deployment and use. Final exam. Prereq: Pol Sci 203. Sem hrs: 3 spring.

Pol Sci 472. Politics of the USSR. 1(1)
Studies the communist system of government emphasizing both the internal political processes and external relations of the USSR. The effects of idcology, national interest, internal forces and foreign relations are analyzed. In the examination of foreign policy, emphasis is placed on the post-1945 era. Final exam. Prereq: Pol Sci 203. Sem hrs: 3 spring.

Pol Sci 473. Politics of Asia. 1(1)
Surveys government and politics of selected countries in East Asia with emphasis on China and Japan. Course includes examination of China's expanding power and influence, implications of a resurgent Japan and other current Asian issues. Final exam. Prereq: Pol Sci 203. Sem hrs: 3 fall. (Offered fall of odd numbered years.)

Pol Sci 474. Politics of Western Europe 1(1)
Political developments in Western Europe from the Marshall Plan to the present. Examines institutional arrangements and political strategies of major Western Europcan nations. Considers potential of a united Europe as a third force. Final exam. Prereq: Pol Sci 203. Sem hrs: 3 spring.

Pol Sci 476. Politics of Latin America. 1(1)
Comparative study of selected Latin American political systems. Fundamental factors affecting political stability in Latin America; the interrelationship of economic, military, political, and social factors in the growth of Latin American political systems; and interhemisphere relations. Final exam. Prereq: Pol Sci 203. Sem hrs: 3 spring.

Pol Sci 478. Politics of the Middle East and North Africa. 1(1)
Analysis of the major political trends within the Middle East and North Africa. The colonial epoch, independence era, contemporary political systems, and major issues in conflict are surveyed. Research paper. Prereq: Pol Sci 203. Sem hrs: 3 spring.

Pol Sci 479. Politics of Africa. 1(1)
Analysis of major political trends in sub-Sahara Africa. The colonial epoch, independence era, contemporary political systems, and major issues in conflict surveyed. Research paper. Prereq: Pol Sci 203. Sem hrs: 3 fall of even-numbered years.

Pol Sci 482. The U.S. Congress. 1(1)
Studies Congress as a political institution. Topics include elections, member-constituent relations, national policy roles, leadership, the committee system, seniority, legislative procedures, legislative oversight of administrative agencies, and the role of political parties Final exam. Prereq: Pol Sci 201. Sem hrs: 3 fall.

Pol Sci 484. The American Presidency. 1(1)
An in-depth study of the Presidency with emphasis on the post-process and the office and powers of the President as well as presidential administrative structures, styles, roles, and personalities. Research paper. Prereq: Pol Sci 201. Sem hrs: 3 spring

Pol Sci 495. Seminar in Political Science. 1(1)
Selected topics in political science. One field trip per semester when appropriate local destinations available. Final exam or final report. Prereq: Department permission. Sem hrs: 3 fall or spring.

Pol Sci 499. Independent Study. 1(0)
Individual study or research in a carefully selected topic conducted on a tutorial basis. Research paper or directed reading. Prereq: Department permission. Sem hrs: 3 fall or spring.

PROFESSIONAL MILITARY STUDIES (PMS)

Offered by the Deputy Commandant for Military Instruction

PMS 110. Professional Foundations. 0(1)
Studies the mission, organization and operation of the U.S. military. Introduces cadets to the military ethic and the professionalism necessary to build a foundation for a career as an Air Force officer. Emphasizes the application of airpower, operation of the Department of Defense and the Air Force's role in support of national objectives. Offers an insight into the responsibilities of officers in accomplishing these goals. Provides a background essential to prepare the student for increased cadet responsibilities and later a military career. Final exam. Sem hrs: 2 fall or spring.

PMS 225. Command and Control of Airpower. 0(1)
Studies command, control, communication and intelligence systems related to the employment of air power. Examines the impact of Air Force organization and command systems on combat capability. Case studies illustrate principles in commanding air combat. Prereq: completion of PMS 110 and 3/C standing. Final exam. Sem hrs: 2 fall or spring.

PMS 330. United States Force Employment Concepts. 0(1)
Examines U.S. military doctrine and employment concepts. Students relate basic doctrine to current force structure and employment concepts, then analyze selected tactical force employment issues through an exercise. Final exam. Prereq: 2/C standing. Sem hrs: 2 fall or spring.

PMS 440. Military Theory and Force Analysis. 0(1)
Provides the foundation of professional military thought upon which the students will be able to build throughout their military careers. Studies the writings of significant military theorists and evaluates national military forces. Examines historical, ideological, doctrinal and force structure factors of the Soviet military. Provides analytical techniques which can be used to study any nation's military power. Honors sections will cover fundamental concepts in greater depth with added emphasis on special topics. Final exam. Final report. Prereq: PMS 330 and department permission for honors sections. Sem hrs: 3 fall or spring.

PMS 495. Special Topics. 0(2xx)
Selected topics pertaining to the military. No final. Prereq: Department permission. Sem hrs: 3 fall or spring.

PMS 499. Independent Study. 0(0)
Individual study and/or research under the direction of a Professional Military Studies instructor. No final. Prereq: Department permission. Sem hrs: 3 fall or spring.

SOCIAL SCIENCES (Soc Sci)

Soc Sci 400H. Social Sciences Honors Seminar 1(2')
Interdisciplinary course. This seminar treats the social world in which enrolled cadets will serve when they are senior decision makers. Leading analytical paradigms of the contributing social scientific discipline are creatively applied while examining and generating alternative futures. Emphasis is placed on defense-related considerations. Final project. Prereq: Firstclass Honors Degree candidate or permission of the division chairman.

HISTORY

Our century has seen the birth and tremendous growth of American military aerospace power. The aviation pioneers of World War I prepared the way for the decisive role played in World War II by both tactical and strategic airpower. After the second war, our nation's leaders realized the growing importance of airpower to free-world defense and, in 1947, Congress established the United States Air Force as an independent branch of service.

The Air Force saw the need for an academy specifically designed to educate a nucleus of career officers for the new service. On April 1, 1954, Congress authorized establishment of the Air Force Academy and President Dwight D. Eisenhower signed the legislation. The Secretary of the Air Force appointed a site selection committee, composed of prominent civilian and military leaders, to examine sites throughout the country to find an appropriate spot for the new academy.

First on horseback, then by air with committee member Charles A. Lindbergh at the controls, the selection committee explored the large expanse of land just north of Colorado Springs. The area located along the Rampart Range of the Rocky Mountains with Pikes Peak towering in the background impressed the committee and, after screening numerous locations and visiting proposed sites in many states, they agreed on the Colorado site. Pending construction of the

"Ask not what your country can do for you but what you can do for your country."
John F. Kennedy

Academy at the permanent site, a temporary location at Lowry Air Force Base in Denver was prepared to accept the first class. On July 11, 1955, the first class of 306 cadets was sworn in and the Academy was dedicated.

The President appointed Lieutenant General Hubert R. Harmon as the first Superintendent of the Academy. Under General Harmon's direction, the Academy staff designed a balanced program of leadership, academics, and athletics.

While a cadet way of life, a tradition, and a curriculum were being formed at Lowry, work got underway in the fall of 1955 at the site north of Colorado Springs. On August 29, 1958, cadets began to move into the newly constructed Academy. On June 3, 1959, the Academy commissioned its first officers.

Since the first class graduated, the Cadet Wing has grown to over 4,000 cadets. Part of this expansion included the addition of women to the Cadet Wing. President Gerald R. Ford signed the legislation authorizing this addition on October 7, 1975. Women comprise approximately 12 percent of each entering class, which is consistent with the needs of the Air Force.

Although the youngest of the service academies, many Air Force Academy graduates have made significant contributions to the defense of freedom and leadership of our country. More than 150 graduates were killed in Southeast Asia, and another 27 were captured, but returned from Vietnam.

"The world you will face as senior Air Force officers will be tremendously different than the world as we know it now. Only those of you who can adapt and grow amidst such rapid change will succeed in these turbulent times."

Col Delligati and the parents of Lance P. Sijan, Class of 1965, the Air Force Academy's first Medal of Honor winner, view his portrait.

In addition to the increasing numbers of general officer graduates, two graduates have been designated as pilot aces, and one graduate has received the Medal of Honor. The two aces, Richard S. Ritchie, Class of 1964, and Jeffrey S. Feinstein, Class of 1968, received the Air Force Cross, the nation's second highest award.

Lance P. Sijan, Class of 1965, posthumously received the Medal of Honor for his heroic efforts in evading capture after ejecting from his disabled aircraft over Vietnam and then resisting the enemy.

Another graduate, Karl W. Richter, Class of 1964, volunteered to fly 200 combat missions over North Vietnam, and was shot down on his 198th mission. He is recognized as the first Air Force Academy legendary hero.

Two graduates, Major Lawrence E. Stellmon, Class of 1969, and Captain Wayne K. Holum, Class of 1973, fly with the Thunderbirds, the Air Force's precision flight team.

Also contributing to the Air Force Academy's history and tradition are astronauts Karol J. Bobko, Class of 1959, Frederick D. Gregory, Class of 1964, Loren J. Shriver, Class of 1967, and Richard O. Covey, Class of 1968.

"One of the keys to success at the Academy is recognition of the Academy's uncommon goal. This goal is your commitment to the profession of arms. No civilian institution has this goal to the degree of a service school. Upon the accomplishment of this goal rests the future of America."
Col Robert S. Delligatti

ASSOCIATION OF GRADUATES

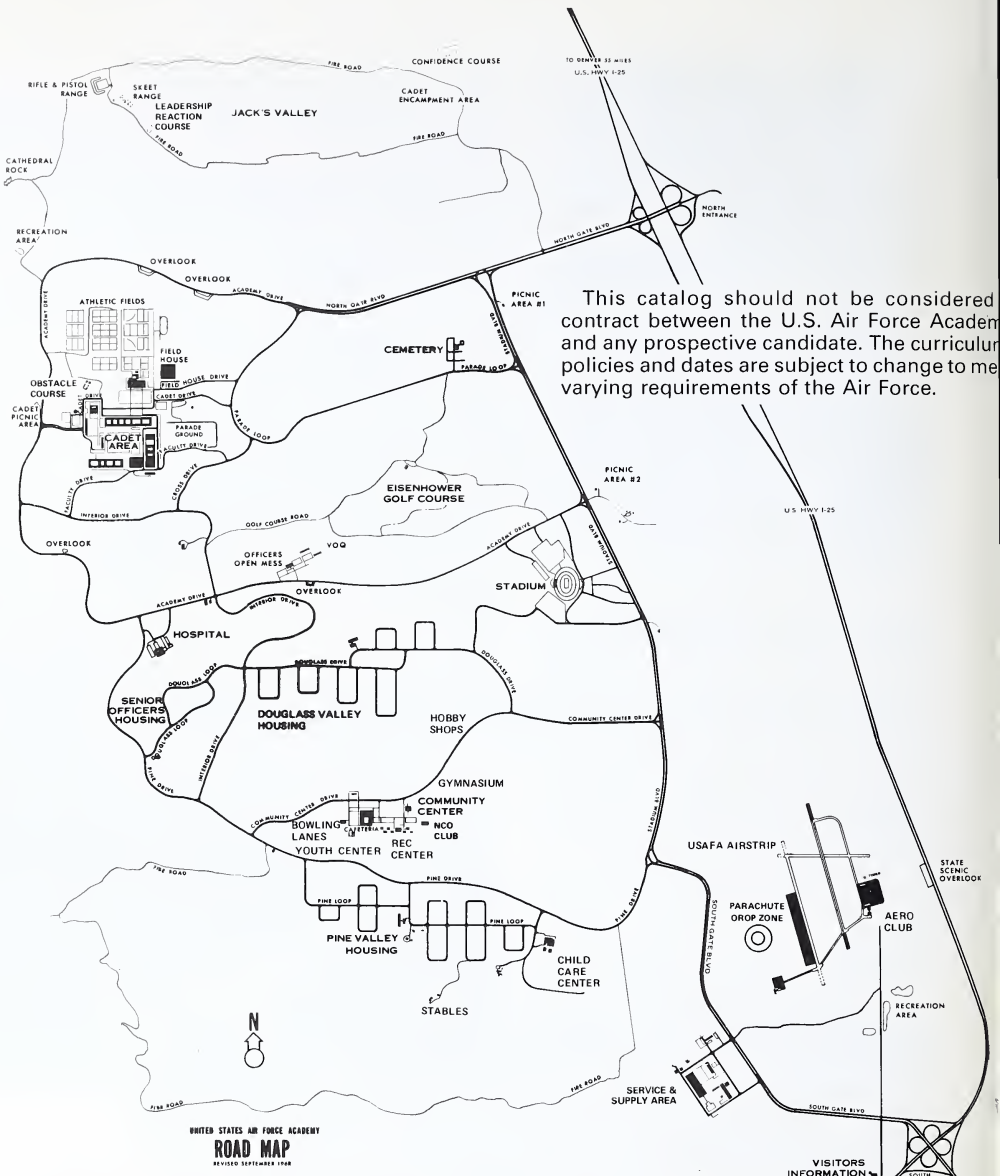
The Association of Graduates (AOG), the Academy's alumni organization, maintains records on all Academy graduates, making it possible to contact graduates anywhere in the world. All graduates may join the AOG, and any person interested in the Academy may join as an associate member. All AOG members receive the quarterly magazine Checkpoints and the annual Register of Graduates.

The AOG fosters interest and devotion to the Academy, with particular emphasis on the school's history and heritage. It promotes fellowship among Academy graduates and other Air Force officers who are associated with the Academy, and supports many Academy activities. The AOG sponsors annually a Homecoming reunion weekend for graduates and the 100th Night Dining Out for graduating cadets.

It also provides assistance for the Academy Assembly, Military History Symposium, and Summer Scientific Seminar.

The AOG administered and was one of the major donors to the Thunderbird Aviation Overlook project.

Anyone interested in contacting the AOG may call (303) 472-2067, or write: Executive Director, Association of Graduates, USAF Academy, Colorado Springs, CO 80840.



UNITED STATES AIR FORCE ACADEMY

ROAD MAP

REVISED SEPTEMBER 1968

This catalog should not be considered
contract between the U.S. Air Force Academ
and any prospective candidate. The curriculur
policies and dates are subject to change to me
varying requirements of the Air Force.

Prospective candidates, parents, or counselors who have questions not answered by the information in this catalog may write to:

Admissions Liaison Office
United States Air Force Academy
Colorado Springs, Colorado 80840

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FACILITIES

The 18,000-acre Academy site allows space for the many aviational training programs the Academy offers as well as for further expansion of the facilities to accommodate additional students.

Majestic mountains with renowned Pikes Peak in the distance dominate the western side with sweeping plains to the east. Spectacular scenes of nature frame the modern campus. The cadet area, which is the main complex of the Academy, is constructed on the mesa or ridge at the north end of the site. The buildings are designed in contemporary architectural style featuring glass, aluminum, steel and white marble. Many of the buildings are named for famous Air Force leaders as well as significant figures in the Academy's history.

THE CADET CHAPEL, focal point of the cadet area, is striking in its design with 17 towering spires which admit light to the Protestant chapel through colorful stained glass. Catholic and Jewish chapels and an All-Faith worship room are located on the lower-floor level.

SIJAN HALL, an 830-room dorm, was named for the late Captain Lance P. Sijan, Class of 1965, the Academy's first Medal of Honor winner.

MITCHELL HALL, the cadet dining hall, accommodates all cadets at one sitting for meals. It was named for General Billy Mitchell, pioneer of military aviation.

THE AERONAUTICS AND ELECTRONICS LABORATORIES AND OBSERVATORY are located near the academic area.

FAIRCHILD HALL, the cadet academic building, contains academic facilities as well as a cadet dispensary and the Academy Library. It was named for General Muir S. Fairchild, pioneer of Air Force education.

VANDENBERG HALL, a cadet dormitory, has 1,320 rooms, squadron areas, hobby shops, counseling offices and a cadet store. It was named in honor of General Hoyt S. Vandenberg, former Chief of Staff of the Air Force.

THE CADET GYMNASIUM contains two swimming pools (one olympic size) and many athletic courts and areas used for physical education classes and intramural and intercollegiate sports.

THE FIELD HOUSE sports arena includes a multipurpose area utilized for indoor track meets, other sports practices and physical education classes; a 6,600 seat basketball court; and a 3,100 seat hockey arena.

ARNOLD HALL, the cadet social center, includes a ballroom, auditorium, bowling alley, recreation rooms, lounges and snack bars. It was named in honor of General Henry H. "Hap" Arnold, World War II Air Force leader.

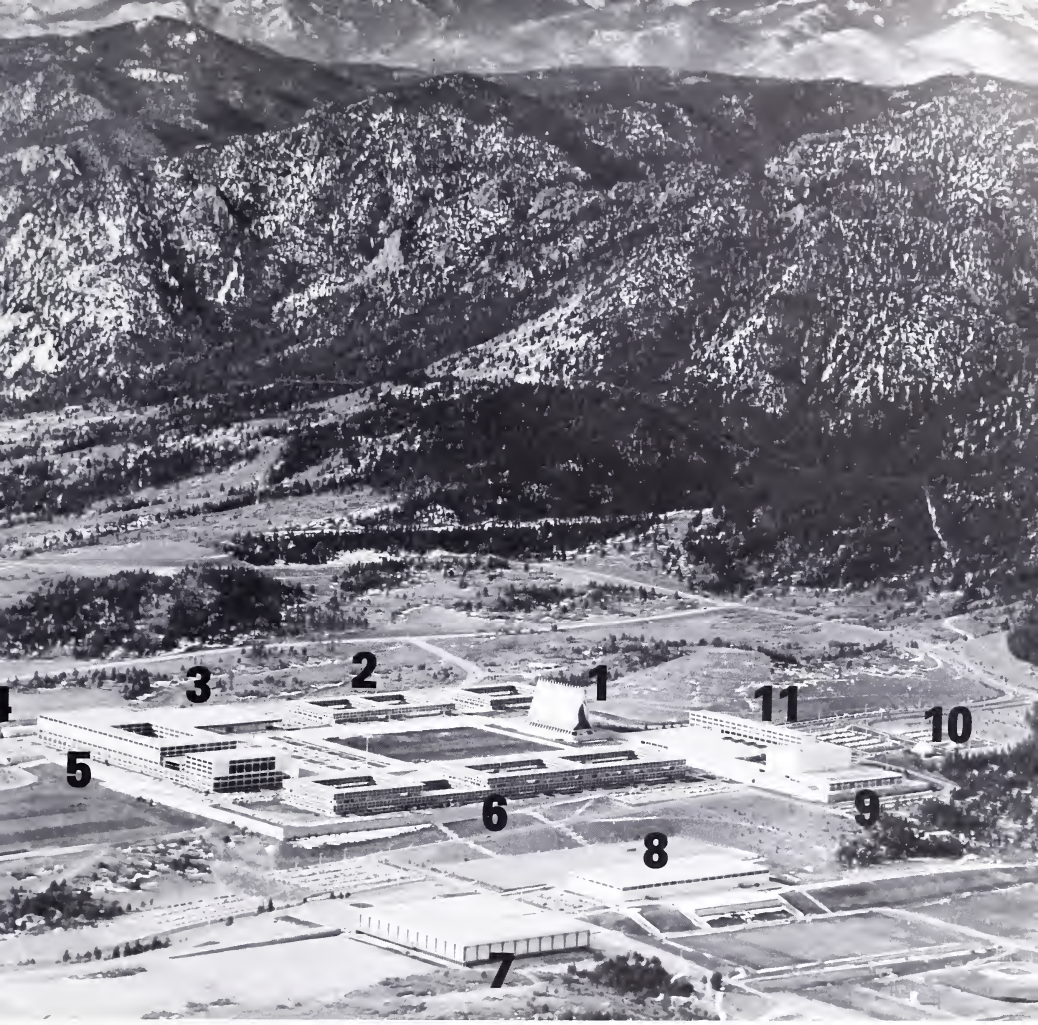
THE PLANETARIUM, containing a modern projector system, is used for cadet instruction and public showings.

HARMON HALL, the administration building, houses the offices of the Superintendent and his staff. It was named for Lt General Hubert R. Harmon, first Superintendent of the Academy.

Around the Academy's 18,000 acres are: the Academy Hospital, the Officers' and Noncommissioned Officers' Clubs, visiting officers' quarters, two family housing areas with public schools, a community shopping center, the Academy Preparatory School, a supply and services area, and a 3,500 foot airstrip.

The Falcon Football Stadium and Eisenhower Golf Course are also included among the Academy's facilities. In the nearby mountains of the Rampart Range, Farish Memorial is a recreational area set aside for cadets and Academy personnel.

Jack's Valley, the primary cadet training area on the Academy grounds, provides field conditions for basic cadet training.



1. **CADET CHAPEL**
2. **SIJAN HALL** (Cadet Dormitory)
3. **MITCHELL HALL** (Cadet Dining Hall)
4. **AERONAUTICS & ELECTRONICS LABORATORIES, OBSERVATORY**
5. **FAIRCHILD HALL** (Academic Building)
6. **VANDENBERG HALL** (Cadet Dormitory)
7. **FIELD HOUSE**
8. **GYMNASIUM**
9. **ARNOLD HALL** (Cadet Social Center)
10. **PLANETARIUM**
11. **HARMON HALL** (Administration Building)

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